This document was too large to scan as a single document. It has been divided into smaller sections.

Section 3 of 14

Document Information			
Document #	0602648		
Title	DRAFT WTP DANGEROUS WASTE PERMIT		
Date	10/04/2006		
Originator	HEDGES JA	Originator Co.	DOEC
Recipient	SCHEPENS RJ, KLEIN K, WILKINS WS	Recipient Co.	DOE-ORP, DOE-RL, BNI
References	WA7890008967		
Keywords			
Projects	RPP		
Structure			

Other IHLW ~~and ILAW~~ Canister Storage Requirements

As stated ~~under~~in WAC 173-303-630(5)(c), a 30 in. separation is required between aisles of containers holding dangerous waste. In addition, WAC 173-303-340(3) requires a 30 in. separation to allow unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment in an emergency.

Evaluation of the 30-in. aisle spacing requirement by the DOE, WTP, the EPA, and Ecology for ~~ILAW and~~ IHLW ~~containers~~ canisters concluded that aisle spacing in the range of 4 to 16 ~~inches~~in. was adequate based on the following factors:

- Personnel access into the immobilized glass container storage areas will be restricted. High radiation dose rates from immobilized glass waste containers will preclude personnel entry into the process and storage areas, and inspection of the ILAW and IHLW containers will be performed remotely. (See Chapter 6 for the inspection approach.)
- Water-based fire suppression systems will not be used in the container storage areas. Because of its inert nature, the glass waste will present a low fire hazard, and a minimal amount of combustible material will be present. The only potentially combustible material that may be present in the immobilized glass waste container storage areas is insulation on crane motors and associated cables. To ensure no water is introduced into the container storage areas, a dry chemical fire suppressant system may be installed.
- Spill control equipment will not be necessary within the ~~container~~IHLW canister storage areas. Spills or leaks from the stored containers will not occur because the glass waste will be in a solid form and will not contain free liquid. The glass transition temperature characterizes the transformation from an equilibrated melt to a "frozen" glass structure ~~Preliminary estimates show that ILAW glass waste will cool to the glass transition temperature in 10 to 30 hours, while the cooling time will be less for smaller IHLW containers.~~

~~The ILAW containers will be stored on the floor of the storage area.~~ The IHLW ~~containers~~ canisters will be stored in a storage rack to allow airflow. No stacking of the containers will occur in the ILAW or the IHLW container storage areas. Closed circuit television cameras will enable general viewing of both areas.

Miscellaneous Mixed Waste Containers

Miscellaneous mixed waste (secondary waste) will be managed in:

- ~~LAW container storage area~~
- HLW ~~container storage area 1e~~ East corridor (HC-0108/09/10)
- HLW ~~container storage~~ loading area ~~2~~(H-0130)
- Failed melter storage facility (balance of facilities)
- Laboratory waste management area (A-0139A/B/C/D)
- ~~Central waste storage facility~~

Containers will be kept closed unless waste is being added, removed, or sampled while in the containment storage areas. Containers stored in these areas will be placed on pallets, or otherwise elevated to prevent contact with liquid, if present. Table 4-2 summarizes the dimensions and maximum capacity of miscellaneous mixed waste storage areas. Containers will be managed in ~~the HLW vitrification, and LAW vitrification plants~~ designated areas throughout the WTP, and then transferred to ~~the central waste storage~~ a suitable TSD facility.

~~The LAW container storage area will be located in the western portion, on the main floor or ground level of the LAW vitrification plant. The aisle space will be 30 inches, and the waste containers will not be stacked. This units' storage capacity is listed in Table 4-2.~~

The HLW ~~container storage area 1~~ East corridor (HC-0108/09/10) will be located in the eastern portion of the main floor (0 ~~foot~~ft elevation) of the HLW vitrification plant. This unit will be used as a storage location prior to export of secondary waste containers out of the plant. Aisle space will be 30 in~~ches~~., and waste containers may or may not be stacked. This units' storage capacity is listed in Table 4-2.

The HLW ~~container storage~~ loading area ~~2~~(H-0130) will be located in the eastern portion on the ~~11~~0 ~~foot~~ft elevation of the HLW vitrification plant. The unit will be used for storage of the miscellaneous waste containers prior to ~~storage in the central waste storage~~ shipment to a suitable TSD facility. The aisle space will be 30 in~~ches~~. and waste containers may or may not be stacked. This units' storage capacity is listed in Table 4-2.

The ~~HLW container storage area 2 will be located in the eastern portion on the 11 foot elevation of the HLW vitrification plant. The unit will be used for storage of the miscellaneous waste containers prior to storage in the central waste storage facility. The aisle space will be 30 inches and waste containers may or may not be stacked. This units' storage capacity is listed in Table 4-2.~~ failed melter storage facility will be a stand-alone building. It will be used primarily to manage HLW melters that have completed their useful service life. The failed melters storage facility may also receive containerized miscellaneous mixed waste, if needed.

The laboratory waste management area (A-0139) will be located in the southern portion on the 0 ft elevation of the analytical laboratory. The unit will be used for storage of miscellaneous waste containers prior to disposition to a receiving TSD facility. The aisle space will be 30 in. and waste containers may or may not be stacked. This unit's storage capacity is listed in Table 4-2.

~~The central waste storage facility is a waste container storage area where containers of mixed waste are received from various WTP facilities in a ready-to-transport state for consolidation into truck-load shipments. The central waste storage facility is a prefabricated metal structure on a concrete foundation pad. The foundation will be constructed to support fork-lift traffic and the waste containers will be palletized. Containers may be stacked on pallets no more than two high. Aisle spacing will be at least 30 inches. The perimeter of the central waste storage facility concrete base will be curbed to ensure that rain water does not infiltrate the waste storage area. The concrete base will be covered with a protective coating, and sloped to a grated sump. The~~

~~containerized waste, which may be radioactive or mixed waste, will be fully characterized and required sampling will be completed prior to transfer to central waste storage facility. Waste containers will qualify for contact handling and meet the current applicable waste acceptance criteria established by the receiving storage, treatment, or disposal facility.~~

~~The central waste storage facility will not have capabilities for waste repackaging, waste compaction, waste reduction, grouting, or other form of waste treatment or internal waste inspection. Waste containers will not be opened at the central waste storage facility. The central waste storage facility may receive waste container containing free liquids, ignitable or reactive waste, or lab packs that contain liquids, ignitable, or reactive waste. Waste that is returned to WTP will be routed to the generating facility where the waste originated for resolution of discrepancies or issues. This units' storage capacity is listed in Table 4-2. As the facility will not be treating, repackaging, or opening waste containers, emission control equipment is not anticipated.~~

Miscellaneous Nonradioactive Dangerous Waste Containers

~~Miscellaneous dangerous waste containers will be managed in a stand-alone building (the non-radioactive dangerous waste container storage area). This container storage area will have a protectively-coated concrete floor and a 10 ft high metal roof. Containers will be kept closed unless waste is being placed inside them. They will routinely be moved by forklift or drum cart, and will be managed in a manner that prevents rupturing or leaking. The non-radioactive dangerous waste container storage areas' storage capacity is listed in Table 4-2. The containers may be stacked two-high. The aisle spacing will be 30 inches between rows of containers. Containers stored in this area will be placed on pallets, or otherwise elevated to prevent contact with liquid, if present.~~

Miscellaneous dangerous waste containers will typically be managed in the nonradioactive dangerous waste container storage area, or in non-permitted waste management units (satellite accumulation areas and less-than-90-day storage areas) located throughout the WTP. The nonradioactive dangerous waste container storage area will consist of a concrete pad approximately 25 ft by 30 ft. The area may include a metal roof or portable storage buildings such as cargo containers or storage lockers. Containers will be kept closed unless waste is being added, removed, or sampled. They will routinely be moved by forklift or drum cart, and will be managed in a manner that prevents ruptures and leaks. The storage capacity for the nonradioactive dangerous waste container storage area is listed in Table 4-2. The containers in that area may be stacked two high and aisle spacing will be at least 30 in. between rows of containers. Containers stored in this area will be placed on pallets, or otherwise elevated to prevent contact with liquid, if present.

4.2.1.2.2 Waste Tracking

The plant information network interfaces with the integrated control network and is designed to collect and maintain plant information. The plant information network is currently planned to the following systems:

- ~~Maintenance management system~~

- Plant data warehouse and reporting system
- Laboratory information management system
- Waste tracking and inventory system

Inventory and Batch Tracking

The waste tracking and inventory system will interface with the information system data historian to provide reporting information such as tank volumes, waste characteristics, and facility inventories of process waste. The waste tracking system will also be used to query operations parameters at any time information is needed, as specified by operations, to manage the process system. IHLW canisters and ILAW containers will be tracked within the facility using an operations developed system: for example, manually recording on a board, manually inputting into the information network, or if available automated through the integrated control network.

~~Sample Tracking~~

~~Sampling activities will be started, monitored, and controlled by the integrated control network, with key sequence durations and operations logged into the waste tracking and inventory system directly from the integrated control network. Sampling operations will be requested by the integrated control network, plant operators, or laboratory personnel. These requests will be time and date stamped, as will the actual sampling operation and the associated sample handling and laboratory activities. Sample requests and operations will be channeled through the integrated control network, which will operate in a supervisory capacity and will communicate the necessary information to the waste tracking and inventory system.~~

~~The laboratory information management system will be an integral feature of the plant information network. Workstations will be located within the laboratory and the plant control rooms. The laboratory information management system will record the required quality control checks to assure correct sample preparation and selection of analyses, and controlled checking and approval of results.~~

~~Sample containers received in the laboratory preparation area will be identified by their identification label. The identification label provides details of the sample source and, therefore, specifies the required preparation and analysis techniques. The identification will be registered at the locations where manual intervention is required, such as manual samplers. The results of calibration checks on equipment and analyzers will be recorded.~~
~~Analytical results will be compiled by the laboratory information management system and held, pending checking and approval by laboratory staff, before formally recorded within the waste tracking information system. Results that affect the progression of the main plant process will be communicated to appropriate plant personnel where required. WTP samples that come under the exclusion provided in WAC 173-303-071(3)(l) may not be tracked.~~

Secondary Waste Stream Tracking

~~Secondary waste streams will be tracked within the waste tracking and inventory system in a manner similar to that primary waste streams. Secondary waste streams will be managed by using assigned, unique identification numbers. Corresponding histories and data collection triggers will gather process and status information during the processing of secondary waste in order to satisfy tracking of waste disposal records. Shipments of overpacks will be labeled and tracked as part of the inventory control function of the waste tracking and inventory system.~~

~~Maintenance, decommissioning, or disposal activities may generate consumables, including such items as equipment, hardware, personal protective equipment, and materials used in the normal operation of the Plant. Consumables that are designed as dangerous will be tracked by the maintenance management system, with appropriate fields denoting the hazardous classification of the disposed parts and materials, and cross-linked to disposal records. Waste being accumulated in satellite accumulation areas under the provisions of WAC 173-303-200 may not be tracked until it has been accepted into a permitted portion of the WTP~~.

Containerized secondary waste streams and equipment will be tracked and managed through commercially available database management software. Containers will be mapped in each plant and updated during the inspection process using a commercially available drawing software application.

Laboratory Information Management System

The laboratory information management system (LIMS) will be an integral feature of the plant information network. The LIMS will serve as an essential tool for providing data management of regulatory and processing samples. The chosen LIMS will be a commercial off-the-shelf software package designed for performing laboratory information management tasks as described in ASTM E1578-93, *Standard Guide for Laboratory Information Management Systems (LIMS).*

The LIMS will track the flow of samples through the laboratory. Samples received in the laboratory will be identified with a unique identification label. The identification label provides details of the sample process stream. Baseline analyses are defined by the requesting plant. Additional analyses, as required, will be input into LIMS by laboratory analysts. Data will be input into LIMS manually or by data transfer using LIMS/instrument interface. Analyses will be performed using approved and validated analytical procedures.

Analytical results will be compiled by the LIMS and held pending checking and approval by appropriate staff. Approved results will be reported to the requesting plant.

4.2.1.3 Container Labeling [D-1c]

Immobilized Waste Glass Containers

Due to the radioactivity and ~~remote~~ handling requirements of the immobilized waste containers, conventional labeling of the immobilized waste containers will not be feasible and an alternative to the standard labeling requirements will be used. This alternative labeling approach will use a unique alphanumeric identifier that will be welded onto each immobilized glass waste container.

The welded "identifier" will ensure that the number is always legible, will not be removed or damaged during container ~~decontamination~~ handling, will not be damaged by heat or radiation, emits no gas upon heating when waste glass enters the container, and will not degrade over time.

The identifier will be welded onto the shoulder and side wall of each immobilized glass container at two locations 180 degrees apart. Characters will be approximately 2 in. high by 1.5 in. wide ~~(See Figures 4A-118 and 4A-119 for examples of these identifiers)~~. The identifier will be formed by welding on stainless steel filler material at the time of container ~~construction~~ fabrication. This identifier will be used to track the container from receipt at the WTP, throughout its subsequent path at the WTP, until it leaves the plant to be disposed or stored.

Each identifier will be composed of eight coded alphanumeric characters. For example, HL123456 would be an immobilized waste glass container storing ~~Hanford~~ ILAW with the unique number 123456, and HH123456 would denote an IHLW ~~container~~ canister. This unique number will be maintained within the plant information network and will list data pertaining to the waste container including waste numbers and the major risk(s) associated with the waste.

Personnel access into the immobilized glass waste container storage areas will be limited and controlled administratively. Signs designating the hazards associated with the immobilized waste glass will be posted at appropriate locations outside the container storage areas.

Miscellaneous Mixed Waste Containers

The miscellaneous mixed waste containers will be labeled with the accumulation or generation start date, as appropriate, the major risk(s) associated with the waste, and the words "hazardous waste" or "dangerous waste." A waste tracking and inventory system will be implemented. Labels and markings will be positioned so that required information is visible. The label will meet the WAC 173-303-630(3) requirements, and the dangerous waste number will be clearly identified.

The labels on the overpack for the spent ~~or failed~~ melters will carry the accumulation or generation start date, the major risk(s) associated with the waste, and the words "hazardous waste" or "dangerous waste". A waste tracking and inventory system will be implemented. Labels and markings will be positioned so that required information is visible, and the dangerous waste number will be clearly identified.

Miscellaneous Dangerous Waste Containers

The miscellaneous dangerous waste drums will be labeled with the accumulation or generation start date, as appropriate, the major risk(s) associated with the waste, and the words "hazardous waste" or "dangerous waste". A waste tracking and inventory system will be implemented. Labels and markings will be positioned so that required information is visible. The label will meet the WAC 173-303-630(3) requirements, and the dangerous waste number will be clearly identified.

4.2.1.4 Containment Requirements for Storing Waste [D-1d]

~~The wastes managed in the immobilized waste container storage areas, and the limited amount of other materials present in the majority of the container storage areas, do not require secondary containment, as discussed below.~~ Secondary containment requirements for the waste managed in the immobilized waste container storage areas and the limited amount of other materials present are discussed below.

4.2.1.4.1 Secondary Containment System Design [D-1d(1)]

Secondary containment is required for areas in which containers hold free liquids. It is also required for areas managing wastes exhibiting the characteristics of ignitability or reactivity as defined in WAC 173-303-090(5) and (7).

~~ILAW and~~ IHLW

~~Secondary containment is required for areas in which containers hold free liquids. It is also required for areas managing wastes exhibiting the characteristic of ignitability or reactivity as defined in WAC 173-303-090(5) and (7).~~ Secondary containment requirements do not pertain to the ~~ILAW and~~ IHLW (canister) container storage areas, as these ~~containers~~ canisters will not contain free liquids or wastes that are designated ignitable or reactive.

Miscellaneous Mixed Waste

~~Secondary containment is required for areas in which containers hold liquids. It is also required for areas managing wastes exhibiting the characteristic of ignitability or reactivity as defined in WAC 173-303-090(5) and (7). It is anticipated that miscellaneous mixed waste will not contain liquids; therefore, these requirements should not pertain to the WTP container storage areas, with the exception of the central waste storage facility. However, in the event that wastes containing liquids or wastes exhibiting the characteristics of ignitability or reactivity are generated, portable secondary containment that meets the requirements of WAC 173-303-630(7) will be provided.~~ Miscellaneous mixed waste storage areas may contain waste requiring secondary containment. If wastes containing liquids or wastes exhibiting the characteristics of ignitability or reactivity are generated, portable secondary containment that meets the requirements of WAC 173-303-630(7) will be provided.

~~The central waste storage facility may receive wastes that contain liquids or are incompatible. The central waste storage facility will be designed to meet the secondary containment requirements of WAC 173-303-630(7), and will include a protective coating on the floor, berms, sloped floors, sumps, and/or portable secondary containments. Wastes that do not contain free liquids or other disqualifying wastes will not require secondary containment. Incompatible waste will be managed in accordance with appropriate requirements.~~

Miscellaneous Dangerous Waste

~~Wastes that do not contain liquids or other disqualifying wastes will not require secondary containment. Containers with liquids will be provided with secondary containment in the form of portable secondary containments made of high-density polyethylene or equivalent material to ensure containment. The secondary containments will have a capacity that meets the~~

~~requirements of WAC 173-303-630(7), and will have a two-way forklift entry.~~ The nonradioactive dangerous waste storage area may contain waste requiring secondary containment. If wastes containing liquids or wastes exhibiting the characteristics of ignitability or reactivity are generated, portable secondary containment that meets the requirements of WAC 173-303-630(7) will be provided.

4.2.1.4.2 System Design [D-1d(1)(a)]

~~ILAW~~

~~There will be two container storage areas for the ILAW containers in the LAW vitrification plant, as follows:~~

- ~~ILAW buffer container storage area~~
- ~~ILAW container storage area~~

~~Both the ILAW container storage areas will be located in the LAW vitrification plant, which is designed to be seismically qualified, as outlined in Supplement 1. A secondary containment system will not be needed because the immobilized glass waste will not contain liquid. In addition, because liquid is not expected within the ILAW container storage area, the floor will not be sloped and will not contain drains or sumps.~~

~~Liquid will not be present within the ILAW container storage areas for the following reasons:~~

- ~~Administrative controls will ensure liquid does not enter or condense inside filled ILAW containers~~
- ~~The ILAW container storage areas will be completely enclosed within the LAW vitrification plant~~
- ~~The roof of the LAW vitrification plant will be metal roofing, roof insulation, and a vapor barrier~~
- ~~Penetrations to the storage areas will be sealed to prevent water ingress~~
- ~~Rainwater will be directed away, using roof drains~~

IHLW

There will be one container storage area for the IHLW ~~containers~~ canisters in the HLW vitrification plant, as follows:

- IHLW ~~container~~ canister storage ~~area~~ cave (H-0132)

The IHLW ~~container~~ canister storage ~~area~~ cave will be located in the HLW vitrification plant, which is designed to be seismically qualified, as outlined in DWP Attachment 51, Supplement 1. A secondary containment system will not be needed because the immobilized glass waste will not contain liquid. In addition, because liquid will not be present in the IHLW container storage area, the floor will not be sloped and will not contain drains or sumps.

Liquid will not be present within the IHLW container storage area for the following reasons:

- Administrative controls will ensure that liquid does not enter ~~or condense~~ inside filled IHLW ~~containers~~ canisters
- The IHLW container storage area will be completely enclosed with a metal roof
- Penetrations to the storage area will be sealed to prevent water ingress
- Rainwater will be directed away using roof drains

~~A schematic~~ The location of the IHLW container storage areas are shown on general arrangement drawings in DWP Attachment 51, Appendix 10.4~~4A~~.

Miscellaneous Mixed Waste

There will be ~~six~~ four miscellaneous mixed waste (secondary waste) container storage areas at the WTP, as follows:

- ~~LAW container storage area~~
- HLW ~~container storage area 1~~east corridor El. 0 ft (HC-0108/09/10)
- HLW ~~container storage~~ loading area ~~2~~(H-0130)
- ~~HLW container storage area 3~~
- ~~Central waste storage area~~
- ~~HLW out of service~~ Failed melter storage facility
- ~~LAW out of service melter storage facility~~
- Laboratory waste management area (A-0139 and A-0139A)

~~The LAW container storage area, andt~~ The HLW waste container storage areas will be located within the ~~LAW or~~HLW vitrification plant~~s, respectively~~. The laboratory waste management area will be located within the analytical laboratory. Therefore, these units will be completely enclosed within the plants, which will have metal roofing, roof insulation, and a vapor barrier. Penetrations to the storage areas will be sealed to prevent water ingress, and rainwater will be directed away using roof drains.

~~The central waste storage facility will be a metal-sided building with a concrete floor sloped to a grated sump. Secondary containment sumps will be provided for individual containers. The perimeter of the concrete floor will be curbed. Access to the building will be through two rollup doors capable of allowing forklift access, and one personnel door. It will have a metal roof, concrete floor, and concrete block walls. The floor and lower portion of the walls will be covered with a protective coating. The floor will be sloped to a grated sump.~~

The ~~HLW out of service~~failed melter storage facility will be used primarily to manage HLW Melters that have completed their useful service life. These units will be received in carbon steel overpack containers allowing limited hands-on contact. These overpacks will not be opened while the waste melters are located in this storage facility. The facility is capable of storing up to three waste melters at any given time. The ~~out of service~~spent HLW ~~melters~~Melters will not be stacked.

The ~~HLW out of service~~ failed melter storage facility may also receive containerized miscellaneous mixed waste ~~similar to that managed in the central waste storage facility~~, if needed. These waste containers will be sealed prior to transport to the ~~HLW out of service~~failed melter storage facility. The containers will not be opened while at this storage facility. The waste containers will not be stacked more than two containers high. The ~~HLW out of service~~failed melter storage facility will be a stand-alone building located in the southern portion of the WTP.

~~The LAW out-of-service melter storage facility will be a stand-alone building located in the southern portion of the WTP. The LAW out-of-service melter storage facility will be a prefabricated metal building anchored to a reinforced concrete foundation. The floor will be covered with a protective coating and sloped to a grated sump. The LAW out-of-service melter storage facility will be used primarily to manage LAW melters that have completed their useful service life. The integral shielding of the locally shielded melter allows hands-on contact. The facility is capable of storing up to two waste melters at any given time. The waste LAW melters will not be stacked.~~

~~The LAW out-of-service melter storage facility may also receive containerized miscellaneous waste similar to that managed in the central waste storage facility (no waste containing liquids, no ignitable or reactive waste will be stored at this facility). The containers will not be opened while at this storage facility. The waste containers will not be stacked more than two containers high.~~

Miscellaneous Dangerous Waste

Waste containing liquid may be present in the nonradioactive dangerous waste storage area. Containers with liquids will be provided with portable secondary containment ~~in the form of portable secondary containments made of high density polyethylene or equivalent material to ensure containment. The secondary containments will have a capacity that meets~~meeting the requirements of WAC 173-303-630(7)~~and will have a two way forklift entry~~.

4.2.1.4.3 Structural Integrity of the Base [D-1d(1)(b)]

The storage areas will be constructed to support storage and transportation of containers within the container storage areas and will be designed with the following:

- Containment system capable of collecting and holding spills and leaks
- Base will be free of cracks and gaps and sufficiently impervious to contain leaks
- Positive drainage control
- Sufficient containment volume
- Sloped to drain or remove liquid, as necessary

4.2.1.4.4 Containment System Capacity [D-1d(1)(c)]

~~ILAW and~~IHLW

Because liquids will not be present in the containment system~~for these three units~~ IHLW storage areas, a containment system capacity demonstration is not required.

Miscellaneous Mixed Waste

The ~~LAW container storage area and the~~HLW container storage areas do not require secondary containment because storage of liquids in these units is not anticipated. If the waste is found to contain liquid, portable secondary containment will be provided that meets the requirements of WAC 173-303-630(7). The waste container will function as the primary containment while the portable containment device will function as the secondary containment. Each portable secondary containment will have the capacity to contain 10% of the volume of all containers within the containment area, or the volume of the largest container, whichever is greater.

Liquid waste may be stored in the laboratory and waste management area. Each container holding liquid dangerous waste will be placed into portable secondary containment that meets the requirements of WAC 173-303-630(7). The waste container will function as the primary containment while the portable containment device will function as the secondary containment. Each portable secondary containment will have the capacity to contain 10% of the volume of all containers within the containment area, or the volume of the largest container, whichever is greater.

~~Liquid waste may be stored in the central waste storage facility. Secondary containment will have the capacity to contain ten percent of the volume of all containers or the volume of the largest container, whichever is greater~~.

Miscellaneous Dangerous Waste

Waste containing liquid may be present in the nonradioactive dangerous waste container storage area. Each container holding liquid nonradioactive dangerous waste will be placed into portable secondary containment. The waste container will function as the primary containment while the portable sump will function as the secondary containment. Each portable secondary containment will have the capacity to contain 10% of the volume of all containers within the containment area, or the volume of the largest container, whichever is greater. Typically, the waste containers will be steel drums.

4.2.1.4.5 Control of Run-On [D-1d(1)(d)]

IHLW

The IHLW container storage areas will be located in the HLW vitrification plant. The requirements for this section do not apply because the immobilized glass waste container storage areas are within the vitrification plants and therefore will not be exposed to run-on.

Miscellaneous Mixed Waste

Run-on will not reach the interior of the miscellaneous mixed waste storage areas, because they will be located within buildings, which will have roof gutters to remove precipitation.

Miscellaneous Dangerous Waste

Run-on will not reach the interior of the ~~miscellaneous~~nonradioactive dangerous waste container storage area, because ~~it will be a stand-alone~~waste will be managed in buildings with walls and roof~~gutters~~ to remove precipitation.

4.2.1.4.6 Removal of Liquids from Containment System [D-1d(2)]

~~ILAW and~~ IHLW

No liquids will be present in the containment system; therefore, the requirements of this section do not apply to the immobilized waste glass container storage areas.

Miscellaneous Mixed Waste

Portable secondary containment sumps will be provided for individual containers that contain liquids. Hand pumps or similar devices will be used to remove liquid released to the portable secondary containments.

Miscellaneous Dangerous Waste

Portable secondary containment sumps will be provided for individual containers that contain liquids. Hand pumps or similar devices will be used to remove liquid released to the portable secondary containments.

4.2.1.4.7 Demonstration that Containment is not Required because Containers do not Contain Free Liquids, Wastes that Exhibit Ignitability or Reactivity, or Wastes Designated F020-023, F026 or F027 [D-1e]

~~ILAW and~~IHLW

The ~~ILAW and~~IHLW glass ~~container~~canister storage area will not contain liquids. The vitrification process volatilizes water or other liquid materials existing at ambient conditions in the waste slurry feed that enters the melter.

The waste numbers for ignitability (D001) and reactivity (D003) will not be managed in the immobilized glass container storage areas. Wastes with the F020-F023, F026, and F027 numbers are not identified for the DST system unit. Therefore, these waste numbers will not be present at the WTP.

Miscellaneous Mixed Waste

Liquids may be present in wastes in the ~~central waste storage facility, and the miscellaneous dangerous~~laboratory waste ~~container storage~~management area. Secondary containment will be provided for individual containers that manage liquids. ~~The waste numbers for ignitability (D001) and reactivity (D003) will not be managed in the miscellaneous mixed waste storage areas~~The laboratory waste management area may manage D001 and D003 waste. Wastes with the F020-F023, F026, and F027 numbers are not identified for the DST system. Therefore, these waste numbers will not be present at the WTP.

Miscellaneous Dangerous Waste

The ~~miscellaneous~~nonradioactive dangerous waste container storage area may manage liquids and D001 and D003 waste; therefore, secondary containment will be provided. Wastes with the F020-F023, F026, and F027 numbers are not identified for the DST system unit. Therefore, these waste numbers will not be present at the WTP.

4.2.1.5 Prevention of Reaction of Ignitable, Reactive, and Incompatible Wastes in Containers [D-1f]

Ignitable, Reactive, or Incompatible ~~ILAW and~~ IHLW

Immobilized glass waste will not be ignitable, reactive, or incompatible with the wastes managed in the ~~ILAW and~~IHLW ~~container~~canister storage areas. The requirements of this section are not applicable to the immobilized glass waste containers, including spent ~~or failed~~melters.

Ignitable, Reactive, or Incompatible Miscellaneous Mixed Waste and Miscellaneous Dangerous Waste

Potentially incompatible wastes are not expected to be managed in the miscellaneous mixed waste storage areas, except for the laboratory waste management area and the nonradioactive dangerous waste container storage area. If such wastes are managed ~~here~~in one of these areas, the containers of incompatible waste or chemicals will not be stored in close proximity to each other. Acids and bases will be stored on separate portable secondary containment sumps; oxidizers will be stored in areas separate from combustible materials; and corrosive chemicals will be stored on a separate secondary containment sump. These separate storage areas within the unit will be clearly marked with signs indicating the appropriate waste to be stored in each area. Potentially incompatible waste will be stored at least one aisle width apart.

4.2.2 Tank Systems [D-2]

This section contains descriptive information for each tank system used for managing mixed waste. The term "tank systems" refers to mixed waste storage or treatment tanks and their associated ancillary equipment and containment systems. Figures and permit drawings depicting design features of tank systems are found in ~~Appendix 4A~~DWP Attachment 51.

The following text uses the terms "vessel" and "tank". The term "vessel" is an engineering term and denotes more robust construction than a typical mixed waste storage or treatment tank. The term "vessel" is included due to the use of the term in the American Society of Mechanical Engineers (ASME) codes and specifications, which will be followed for most tank construction at the WTP.

4.2.2.1 Design, Installation, and Assessment of Tank Systems [D-2a]

This section describes the attributes of tank systems that will contain mixed waste. Tanks and ancillary equipment containing only additives or reagents, such as glass-forming chemicals, precipitation reagents, or unused resin, are not regulated under RCRA or the Washington State Dangerous Waste Program, and are therefore not included.

Tank systems that will contain mixed waste are designed to comply with worst-case scenarios, such as extreme pH, temperature, and pressure conditions. The WTP will be entirely new construction, and there will be no "existing tanks" in the plant. Tank systems, with the exception of the two outside tanks at the pretreatment plant, will be located indoors and within process cells, process rooms, or caves with controlled access.

4.2.2.1.1 Design Requirements [D-2a(1)]

Tanks

Most of the tanks ~~which~~that come in contact with the waste will be operated under atmospheric pressure conditions at the WTP. The mixed waste tanks will be designed, at a minimum, to *Boiler and Pressure Vessel Code* (ASME 2000), the American Petroleum Institute (API) codes, or other appropriate design codes. Tank integrity will be reinforced by additional requirements of the tank group and seismic category assignment to each tank. ~~Five vessel or tank groups will be designated to accommodate the variations in design criteria and safety requirements of the WTP. Groups 1 through 3 will be high-integrity vessels and will be located within cells or caves. Group 4 will be medium-integrity and Group 5 will be constructed to commercial standards. Some general vessel or tank design requirements are summarized as follows:~~

- ~~The approximate minimum thickness of uncorroded cylindrical shell and dished head will be determined based on the vessel diameter.~~
- ~~The minimum anchor bolts, where used, will be 0.75 in. in diameter, Unified National Code (coarse thread) bolts.~~
- ~~Three types of tank supports may be used: skirts, saddles or legs.~~
- ~~Minimum wall thickness for a nozzle neck or other connection (including access and inspection openings) will comply with the requirements of ASME Code paragraph UG-45 (ASME 1996).~~

The vessels will be designed for seismic loading in accordance with the *Uniform Building Code* (UBC) standard for Zone 2B (UBC 1997).

The codes and standards that will be followed for design, construction, and inspection for the tanks are identified below, as applicable:

ANSI	American National Standards Institute
API	American Petroleum Institute
ASME	American Society of Mechanical Engineers
ASNT	American Society of Non-Destructive Testing
ASTM	American Society ~~of~~for Testing and Materials
EPA	US Environmental Protection Agency
NBBPVI	The National Board of Boilers and Pressure Vessel Inspectors
OSHA	Occupational Safety and Health Administration
PFI	Pipe Fabrication Institute
UBC	*Uniform Building Code*

WRC Welding Research Council

Permit documents describing tank design requirements are located in DWP Attachment 51, Appendix 7.7:

- *Specification for Pressure Vessel Design and Fabrication*, 24590-WTP-3PS-MV00-TP001
- *Seismic Qualification Criteria for Pressure Vessels*, 24590-WTP-3PS-MV00-TP002
- *Specification for Pressure Vessel Fatigue Analysis*, 24590-WTP-3PS-MV00-TP003

Piping and Pipe Support Design

The design code of the WTP piping and pipe supports is ASME B31.3 Code (ASME 1996), as well as the DOE seismic requirements. In compliance with DOE seismic requirements (DOE 1996), response spectrum method or UBC (UBC 1997) static method is used for the seismic analysis of the piping systems.

Additional information for piping and pipe support design is included in the following documents, which are included in DWP Attachment 51 Appendices as indicated:

- *Material for Ancillary Equipment*, 24590-WTP-PER-M-02-002 (Appendix 7.9)
- *Piping Material Class Description*, 24590-WTP-PER-PL-02-001 (Appendix 4)
- *Ancillary Equipment Pipe Support Design*, 24590-WTP-PER-PS-02-001 (Appendix 7.5)

~~The codes and standards that will be followed for design and construction of the piping and supports are identified below:~~

~~• ASME B31.3 Code – *Chemical Plant and Petroleum Refinery Piping* (ASME 1996)~~
~~• ASME Section III Code – *Rules for Construction of Nuclear Facility Components* (ASME 1995)~~
~~• Code Case N-411 – *Alternative Damping Values for Response Spectra Analysis of Classes 1, 2, and 3 Piping, ASME Section III Code* (ASME 1998)~~
~~• Uniform Building Code (UBC 1997)~~
~~• ASME/ANSI B16.5 - *Pipe Flanges and Flanged Fittings* (ASME 1999)~~
~~• DOE-STD-1020-94 (DOE 1996)~~

~~Table 4-13 summarizes the seismic categories and design standards for piping and pipe supports.~~

4.2.2.1.2 Physical Information for Tanks

Tables 4-3 through Table 4-6 list current tank design information (capacity, materials of construction, and dimensions). The tank systems are grouped by plant and process system.

Tank operation is generally automated. However, operator intervention can be used when human decisions or approval are required for initiation and termination of a process operation.

Descriptions of tank system operation for major WTP process systems are identified in sections 4.1 and 4.2.2.

4.2.2.2 Ancillary Equipment Requirements [D-2a(1)]

Information concerning ancillary equipment is provided in the following subsections.

4.2.2.2.1 Transfer or Pressure Control Devices

Several fluid transfer devices will be used in the WTP. These devices include mechanical pumps, reverse flow diverters, and steam ejectors. Breakpots and seal pots, although not fluid transfer devices, are an important component of vessel operations. These components are discussed in the following sections.

<u>Mechanical Pumps</u>
Mechanical pumps will be used for operations that require high-flow pumps (such as through the evaporator circuits) or high-pressure head pumps (such as for pumping a waste stream through ultrafiltration circuits). Mechanical pumps will be located in process cells, process rooms, or caves. In general, mechanical pumps will be repaired in place, or removed to a maintenance area. However, remotely maintained pumps will be used in areas where maintenance activities would result in a significant radiation dose to the operators.

For normal process operating sequences, mechanical pumps and associated valves will be controlled by the process control system. In systems where off-normal conditions would require pump shutdown, the design will include an alarm mechanism ~~which~~<u>that</u> will also trip the transfer device. The pump system is designed to allow for the drainage of liquid from the pump, and for the introduction of flush liquids at the end of transfers to reduce residual contamination.

<u>Reverse Flow Diverters</u>
Reverse flow diverters will provide for the maintenance-free pulsed or metered transfer of liquids or slurries throughout the treatment process. A reverse flow diverter does not need to be fully submerged in order to remove the contents of a vessel, and it maintains a small and predictable volume of tank contents following its use. Operation of the reverse flow diverter is cyclical, following timed phases: suction phase, drive phase, and blowdown. ~~Figure 4A-120 and~~The following paragraphs describe a typical reverse flow diverter system arrangement.~~Figure 4A-121 illustrates a typical flow diverter~~

<u>Suction phase:</u> In the suction phase, the secondary automatic valve A is open, admitting air to the suction jet pump. Valve B is shut and liquid is drawn from the supply tank through the reverse flow diverter and into the charge vessel. The suction ejector is designed so that it cannot produce a vacuum capable of lifting liquid higher than a certain valve known as the "suction lift". After a short time, the liquid reaches this "suction lift" height and stops, then valve A is shut.

<u>Drive phase:</u> When valve A is shut, valve B is opened, admitting air to the drive nozzle. Air passes through the nozzle and pressurizes the charge vessel. Liquid is forced across the reverse

flow diverter and into the delivery pipe. The delivery pipe is quickly filled with liquid that flows into the delivery vessel.

Blowdown phase: When the charge vessel is nearly empty, valve B is shut; no air is supplied to either jet pump. The compressed air in the charge vessel passes back through the paired jet pumps, down the vent pipe, and into vessel vent system.

Shortly after blowdown begins, the pressure in the charge vessel falls below the delivery head, and the flow of liquid into the delivery vessel is halted. The liquid in the delivery vessel then falls back down the pipe, across the reverse flow diverter, and into the charge vessel. After a short time, the pressure in the charge vessel falls to zero (gauge). The cycle is now complete.

Steam Ejectors

Steam ejectors are used to transfer process liquids, or to reduce the operating pressure of a system by gas removal. They empty liquid from vessels by means of suction lift, using a simple control system. ~~A typical arrangement of a stream ejector system is shown in figure 4A-122.~~

An automated control valve supplies high-pressure steam to the steam ejector. This steam accelerates through a nozzle, creating a differential pressure along a submerged suction leg within the vessel. The pressure than forces the liquid up the suction pipe. This effect is known as *striking*. The steam then conveys the liquid to the destination vessel, normally via a breakpot. Control is established using liquid level instrumentation in the vessel being emptied, and using a temperature indicator, such as a thermocouple, within the breakpot.

Seal Pots

A seal pot is a type of hydraulic seal. A hydraulic seal is used primarily to maintain a separation between vessel vent or offgas systems for feed and receipt vessels. This separation is necessary to prevent migration of airborne contamination between the vessels. Without the seal, airflow could occur due to the different pressures in the vent systems. The seal is a slug of liquid in the interconnecting pipe work that remains after each liquid transfer is completed, blocking airflow between vessels.

The seal can be provided by constructing a simple "U" shape in the piping. Different piping arrangements are used for different purposes. A seal pot is a small vessel with one (inlet or outlet) pipe submerged in the liquid slug in the lower part of the pot, while the other pipe terminates in the top of the pot, above the static liquid level. The pot may be provided with a level indicator or alarm, if necessary, to ensure adequate liquid level. Periodic liquid additions may be needed to maintain the seal, especially if the pipeline is infrequently used. ~~Figure 4A-123 illustrates a typical seal pot.~~

Breakpots

The main function of the breakpot is to reduce the amount of ~~radioactive~~mixed waste material entrained into the vessel ventilation system. Breakpots are provided on transfer lines that use steam ejectors for moving ~~radioactive liqours~~liquids by pressure flow. These types of transfers create the potential for air entrainment of ~~radioactive~~mixed waste contamination. Breakpots function to convert steam from pressure flow to liquid gravity flow, thereby reducing both the effluent loading on the downstream vessel ventilation treatment system and the ~~radioactive~~mixed waste contamination levels in the vessel vent ductwork. Breakpots also serve a secondary purpose by providing a siphon break for other transfer systems where siphoning could occur. ~~A diagram of a breakpot is shown in Figure 4A-124.~~

Breakpots are typically placed at a high point in the discharge line from the steam ejector. Liquid will be pumped into the breakpot through an inlet nozzle in its wall. The incoming liquid will be directed towards a baffle. Within the baffle, noncondensed steam and gases will disengage. The breakpot will be self-draining; the liquid will drain through the breakpot discharge pipe to the destination vessel.

Above the inlet nozzle(s) will be a packed bed where disentrainment of the gas stream will occur. The exiting gas from the packed section will pass into the vessel ventilation system. The packed bed can be washed periodically using a wash ring permanently installed above the packed bed. ~~Within the packed bed, a thermocouple will be located inside a sheath to measure temperature.~~

4.2.2.2.2 Bulges

Bulges are intended ~~for systems/~~to allow hands-on maintenance of equipment ~~that are not radioactively "hot"~~after process fluids are flushed from the bulge piping and components~~to allow hands-on maintenance~~. Bulges provide shielding to personnel during process operation and allow vulnerable or failure prone components to be located outside the process environment. The cell wall provides shielding between the cell and the bulge interior. The bulge includes shielding and contamination control as needed, depending on the process fluid within the bulge piping. A typical bulge consists of a metal frame attached to the cold-side wall of a process cell; the frame is used to support the piping and components as well as the shielding plates (usually steel), which are bolted to the frame. ~~A diagram of a typical bulge is shown in Figure 4A-127.~~

There are two classifications of bulges used at the WTP. One is a "process" bulge; the other is a "service" bulge. The process bulge contains valves, pumps, piping, etc. The service bulge contains valves used to transfer reagents, steam, etc., to the in-cell process equipment. The design of the two bulges is similar.

Bulges are equipped with several wash systems, facilitating washing both internal and external piping, components, and bulge confinement surfaces. Decontamination of the equipment internals and associated piping is achieved by externally connecting a flushing system located on the outside of the bulge. Wash fluids could be water or more aggressive media such as nitric acid, provided compatibility with the bulge materials is ensured. ~~Bulges are internally lined with a stainless steel liner and are equipped with a sump, drain, and sump level instrumentation. The drains are connected to the plant wash system.~~

Additional information on process bulges may be found in *Process Bulge Design and Fabrication* (24590-WTP-3PS-MX00-TP001), located in DWP Attachment 51, Appendix 7.7.

4.2.2.2.3 Description of WTP Piping System

Detailed information on piping is included in *Piping Material Class Description* (24590-WTP-PER-PL-02-001), located in DWP Attachment 51, Appendix 4.

Interplant Piping Transfer Lines

Waste feed from the DST system will be transported to the WTP via the waste transfer lines.

The waste feed transfer lines will be double-walled pipe. The inner pipe will be constructed of stainless steel, while the outer pipe will be constructed of carbon steel. The carbon steel outer pipe will be coated with a corrosion-resistant material. In addition, the coated outer pipe for the waste transfer lines from the DST to the pretreatment plant will be surrounded by insulation and a seamless high-density polyethylene outer shell. This extra layer of protective material will isolate the waste transfer lines from soil. The waste transfer lines between the pretreatment plant and the other WTP process plants will not have this extra barrier from the soil, but will be cathodically protected as described later in this section.

A leak detection system will be provided for the entire length of the waste transfer line. Pumping will be terminated, and reception of waste feed from the DST system unit will stop, when a leak is ~~sensed~~identified by the leak detection system.

The inner pipe will be supported by guides, saddles, support keys, or anchors within the outer pipe. The inner pipe will transport waste and maintain the pressure boundary, while the outer pipe will provide secondary containment for the inner pipe. The piping system will be buried under a minimum depth of soil for radiation shielding. The minimum depth of soil will be finalized at the detail design phase and will be not less than the 2 ~~foot~~ft freeze depth. A heat trace system is not required for pipes buried below freeze depth.

The piping system will have a continuous slope down toward the pretreatment plant. Released liquids resulting from leaks to the outer pipe can be removed as required by WAC-173-640(4)(b). The piping system will be designed to allow water flushing to occur in both directions.

Liquid Effluent Transfer Lines

Liquid effluent generated at the WTP will be routed to the pretreatment plant for recycling through the WTP or disposal to the LERF and ETF. An effluent line will be routed from the pretreatment plant to the LERF and ETF. This line is a buried pipe, constructed of materials that are compatible with the waste, under a minimum ~~two foot~~2 ft of soil serving as freeze protection. The pipes will have a continuous downwards slope towards the LERF and ETF, and will be designed to maintain structural integrity. A leak detection system will be provided for the LERF/ETF waste transfer lines.

Intraplant Piping

Within plants, the pipelines associated with the tank system will be single-walled. Secondary containment will be provided for piping within the plants by double-walled pipe or partially lined process cells, process rooms, or caves. If needed, other containment methods such as a bulge or concrete ducts with liners will be provided at appropriate locations. The bulge or concrete ducts will be provided with a low point which will drain to process cells, process rooms, or caves. The leak detection equipment located within the process cells, process rooms, and caves will warn of a piping leak through alarms.

Piping between plants and the two outdoor tanks at the pretreatment plant will be double-walled below grade and below the freeze line, similar to the waste transfer line.

Cathodic Protection

An impressed current cathodic protection system will be used for eliminating or mitigating corrosion on underground piping. The cathodic protection system will maintain a negative polarized potential between the protected pipe and a saturated copper/copper sulfate reference electrode.

The ~~electrically powered~~ impressed current cathodic protection system ~~will be used for eliminating or mitigating corrosion on underground tanks and piping. Cathodic protection system will maintain a negative polarized potential within a range of approximately -0.850 millivolts relative to a saturated copper/copper sulfate reference electode. An automatically controlled, impressed-current cathodic protection system is used to maintain the negative polarized potential~~uses direct current provided by a rectifier that is powered from the plant's normal 480 Vac power system. The direct current from the rectifier is connected across the buried anode wire and the protected pipe. The current flows from the anode wire, which is positive, through the electrolyte, to the protected pipe, which is negative, completing the electrical circuit.

~~The impressed current cathodic protection system uses direct current provided by a rectifier powered from the site normal 120 volt alternating current or 480 volt power system. The direct current from the rectifier flows to the buried or submerged impressed current anode. The current then flows from the anode, (positive terminal) through the electrolyte, to the cathode, (negative terminal) completing the electrical circuit~~.

An annual survey, recommended by NACE International (formerly the National Association of Corrosion Engineers), ~~standards~~will be performed on the overall system. ~~Additional information on inspections is provided in Chapter 6 of this application.~~ Test stations will be ~~located to in the field~~provided to ~~facilitate~~permit ~~testing via~~potential measurements ~~readings~~. Additional information on inspections is provided in Chapter 6.

The following waste transfer lines are ~~use there~~provided with cathodic protection ~~system~~at the WTP. The waste transfer lines are double encased and constructed of materials that are compatible with the waste:

- ~~Incoming waste feed lines to the pretreatment plant~~
- Mixed waste transfer lines between the pretreatment plant and the HLW vitrification plant
- Mixed waste transfer lines between the pretreatment plant and the LAW vitrification plant

- Mixed waste transfer line between the analytical laboratory and the pretreatment plant
- The incoming DOE waste feed pipelines that interface with the WTP pipelines are not cathodically protected; therefore, the waste feed lines routed between the DOE interface point and the pretreatment plant (which are similarly configured) are not intentionally cathodically protected. They are, however, bonded at the crossing of the plant service air piping between the pretreatment plant and the HLW vitrification plant on the opposite end (which is adjacent protected piping). The waste feed lines, therefore, may receive small amounts of protective cathodic protection current in the area where they are bonded. This area is defined as the "zone of influence." Bonding is required to eliminate stray electrical currents that may occur in the zone of influence and thereby eliminate the possible corrosion process. The waste feed lines are also provided with test stations at both ends to allow potential tests that will indicate if corrosion is a concern.
- Radioactive/dangerous waste effluent transfer lines to ~~the~~ETF/LERF

4.2.2.2.4 Description of Foundations

Tank systems containing mixed waste will be located indoors in process cells or caves, which will be integral parts of the pretreatment plant, analytical laboratory, the LAW vitrification plant, and the HLW vitrification plant with the exception of two outdoor tanks. Therefore, the design requirements of the tank systems will be met by the structural integrity of the plants. WTP compliance with ~~Uniform Building Code~~UBC seismic design requirements, found in DWP Attachment 51, ~~Chapter 4~~Supplement 1, provides the seismic design requirements for the WTP. The outdoor tanks will be located outside of the pretreatment plant on a protectively-coated concrete pad and concrete berm. The concrete pad for these tanks will be sufficient to support the tanks.

Additional information on the design criteria, load definitions, load combinations, and methodology for the structural design and analysis may be found in *Secondary Containment Design* (24590-WTP-PER-CSA-02-001), located in DWP Attachment 51, Appendix 7.5.

4.2.2.3 Integrity Assessments [D-2a(2)]

~~This section discusses assessment of the structural design of the tanks and foundation.~~

A written assessment of the adequacy of the design ~~and the structural integrity and suitability~~ of tank systems~~, including ancillary equipment, will be prepared. The assessment will be reviewed and certified by an independent qualified registered professional engineer, consistent with Page II-5 of OSWER Policy Directive #9483.00-3, to attest that the tank systems are adequately designed for managing dangerous waste. The assessment will~~ and miscellaneous treatment systems will be prepared on a system-by-system basis. Separate reports are prepared for tanks, tank system ancillary equipment, and associated secondary containment systems. Each assessment will be reviewed and certified by an independent, qualified, registered professional engineer to attest that the tank and miscellaneous treatment systems are adequately designed for managing dangerous waste. Each assessment will include an evaluation of the foundation, structural support, seams, connections, pressure controls, compatibility of the waste with the materials of construction, and corrosion controls for each mixed waste ~~tank~~management system, as appropriate. Assessment reports are located in DWP Attachment 51, Appendix 8.11 for the pretreatment plant, Appendix 9.11 for the LAW vitrification plant, ~~and~~ Appendix 10.11 for the HLW vitrification plant, and Appendix 11.11 for the Lab.

~~*"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."*~~

~~The tank systems will be located indoors, except the vessels located outside the pretreatment plant (process condensate vessels, V45028A/B). The two outdoor tanks will be located on a concrete pad with concrete secondary containment.~~

~~Information regarding the Tank System Design Assessment is included in Appendices 8.10, 9.10, 10.10, 11.10, and 12.10.~~

4.2.2.4 Additional Requirements for Existing Tanks [D-2a(3)]

Tanks and vessels to be permitted in the WTP will be newly constructed; pre-existing tanks will not be used. Therefore, the requirements of this section do not apply.

4.2.2.5 Additional Requirements for New Tanks [D-2a(4)]

Installation of tank systems will be performed in a manner designed to prevent damage to the tank system. The WTP ~~will~~uses an independent, qualified installation inspector, or an independent qualified registered professional engineer ~~(IQRPE)~~to perform tank system installation inspections. Inspection activities will include testing tanks for tightness, verifying protection of ancillary equipment against physical damage and stress, and evaluating evidence of corrosion. The inspections will document weld breaks, punctures, coating scrapes, cracks, corrosion, and other structural defects. Installation inspections will conform to permit requirements and consensus-recognized standards. Inspection findings and corrective actions, as appropriate, will be documented in apost-inspection reports. ~~Additional information is provided in Appendicies 8.11, 9.11, 10.11, 11.11, and 12.11.~~

Additional information describing the installation of tank systems and associated inspections are provided in *Installation of Tank Systems and Miscellaneous Unit Systems,* 24590-WTP-PER-CON-02-001.

4.2.2.5.1 Additional Requirements for New On-Ground or Underground Tanks [D-2a(5)]

The majority of the tanks and vessels to be constructed in the WTP will be located within the pretreatment plant, the analytical laboratory, the LAW vitrification plant, and the HLW vitrification plant. Therefore, the requirements of this section do not apply to the indoor tanks.

The two outdoor Process Condensate Tanks located at the pretreatment plant (RLD-TK-00006A/B) will be located within a bermed and lined secondary containment system and will not be in direct contact with soil. The design of the outdoor tanks' concrete pad will address backfill, soil saturation, seismic forces, and freeze thaw effects. The ancillary piping for the unit will be in contact with the soil, and the effects of corrosion on the piping will be addressed in the final design.

4.2.2.6 Secondary Containment and Release Detection for Tank Systems [D-2b]

This section provides information about the secondary containment for tank systems that will contain mixed waste in the WTP. Descriptions of equipment and procedures used for detecting and managing releases or spills from tank systems are also provided.

A number of documents are provided in appendices to DWP Attachment 51 that provide detailed information regarding the design of the secondary containment system. These documents include the following:

- *Secondary Containment Design*, 24590-WTP-PER-CSA-02-001, located in Appendix 7.5
- *Material Selection for Building Secondary Containment/Leak Detection*, 24590-WTP-PER-M-02-001, located in Appendix 7.9
- *Leak Detection - Sump Level Measurement in Secondary Containment Systems*, 24590-WTP-PER-J-02-001, located in Appendix 7.5
- *Flooding Volume for PT Facility*, 24590-PTF-PER-M-02-005, located in Appendix 8.8
- *Sump Data for PT Facility*, 24590-PTF-PER-M-02-006, located in Appendix 8.5
- *Flooding Volume for 28 Ft Level of PT Facility*, 24590-PTF-PER-M-03-001, located in Appendix 8.8
- *Flooding Volume for LAW Facility*, 24590-LAW-PER-M-02-003, located in Appendix 9.8
- *LAW Facility Sump Data*, 24590-LAW-PER-M-02-001, located in Appendix 9.5
- *Flooding Volume for HLW Facility*, 24590-HLW-PER-M-02-003, located in Appendix 10.8
- *HLW Facility Sump Data*, 24590-HLW-PER-M-02-001, located in Appendix 10.5
- *Sump Data for LAB Facility, 24590-LAB-PER-M-02-002*, located in Appendix 11.5
- *LAB Minimum Leak Rate Detection Capabilities for Leak Detection Boxes, Cell Sumps, and Pit Sumps, 24590-LAB-PER-M-04-0001*, located in Appendix 11.8.
- *Flooding Volume for 56ft Level in PTF*, 24590-PTF-PER-M-04-001, located in Appendix 8.8
- *Flooding Volume for 72ft Level in PTF*, 24590-PTF-PER-M-04-003, located in Appendix 8.8
- *Leak Detection for Underground Transfer Line*, 24590-PTF-PER-M-06-0006, *located in Appendix 8.8*
- *Flooding Volume for Room P-0150 in the PT Facility, 24590-PTF-PER-M-04-0008, located in Appendix 8.8.*
- *Sump Data for PT Facility – Room P-0150, 24590-PTF-PER-M-04-0009, located in Appendix 8.8.*

4.2.2.6.1 Secondary Containment System Requirements [D-2b(1)]

Most of the tank systems containing mixed waste will be located within the plants, although two tanks will be located outside the pretreatment plant. Tank systems containing mixed waste that are located within the plants will be arranged within~~various stainless steel lined~~ process cells, process rooms, caves, ~~that will act as~~or other areas provided with secondary containment liners or coatings. The outside tanks will be located on a coated, bermed, concrete pad within concrete berms that will ~~act as~~ provide secondary containment.

The secondary containment systems will be designed, installed, and operated to prevent migration of waste or accumulated liquid to soil, groundwater, or surface water. The piping associated with the tank systems will be located in the process cells, process rooms, caves, berms, or bulges. Secondary containment for piping systems will be incorporated into the design.

Tank systems and wet miscellaneous treatment systems will be provided with secondary containment that can contain 100 % of the volume from the largest tank within the containment area. In the Pretreatment plant, the 15 black cells and the hot cell at the 0' (foot) elevation are inter connected through hydraulic connections (open penetrations that interconnect adjacent cells) such that the combined secondary containment volume is available, if necessary, to contain a 100% leak from the largest tank. A leak to the hot cell floor, if large enough, will drain to the overflow vessels in the pit at -45' (foot) elevation and ultimately to the -45' (foot) pit secondary containment if the volume of the overflow vessel(s) is exceeded. Secondary containment areas lined with stainless steel will have a gradient (minimum 1%) designed to channel fluids to a sump. In some cases, there may be more than a single sump. For example, the hot cell in the Pretreatment plant has three instrumented sumps for leak detection. Fire suppression water is included as appropriate in determining the height of the secondary containment. Table 4-11 summarizes the calculated minimum liner height at the four process plants. The flooding volume documents identified above present the secondary containment height for each plant.

A concrete berm with protective coating will be used for the pretreatment plant outdoor tanks. This secondary containment area will be capable of holding 100% of the volume from the largest tank within the berm, plus the precipitation from a 25-year, 24-hour rainfall event, as required under WAC 173-303-640(4)(e)(i)(B).

The WTP uses selected industry standards to ensure secondary containment systems have sufficient strength, thickness, and compatibility with waste. The design includes an engineered structural base to protect against failure resulting both from excess force applied during catastrophic events or settlement, and from the stress of daily operation. In the event of a spill or release, the secondary containment design will prevent released mixed waste from reaching the environment, and will safely contain the waste until it can be transferred to an appropriate collection tank.

The following subsections provide detailed descriptions of typical secondary containment systems that will be used at the WTP.

<u>Process Cells</u>
Process cells will be located within process plants. Process cells will typically be constructed of concrete walls to protect plant operators and the environment from radiological exposure and to prevent migration of waste or accumulated liquid to soil, groundwater, or surface water. ~~The process cells will house equipment and pipe work designed to require little or no maintenance for the duration of the WTP~~ Operator access to the process cells will not be allowed during normal operations.

~~The process cell floors and portions of walls will be lined with stainless steel. The floor will be sloped to a collection sump to allow for collection and removal of accumulated liquid within the sump~~.

<u>Black Cells</u>
A black cell is a type of process cell that may contain vessels, evaporators, and piping systems that are used to support process waste stream storage and blending functions. No active equipment (i.e., equipment with moving parts) components are located in the black cell. The design for the vessels and piping is all welded construction. Some instrumentation (e.g., thermocouples, radiation detectors) are remotely replaceable by insertion into sealed pipe wells. The black cell vessels and design do not possess design features for remote replacement. The black cell concept is used in areas where the risk of vessel or piping failure due to corrosion or erosion is low. The WTP Pretreatment plant contains fifteen black cells and the HLW Vitrification plant contains three black cells.

<u>Hot Cell</u>
Alternatively, a hot cell is a type of process cell that contains active equipment and will periodically need to be remotely accessed for equipment maintenance or replacement.

All process cells will be provided with secondary containment as required. The floor will be sloped to a collection sump to allow for collection and removal of accumulated liquid within the sump.

<u>Process Rooms</u>
Process rooms will be located in the LAW vitrification plant and will be very similar to process caves. Access to process rooms will not be allowed during normal ~~radioactive~~operations. However, access will be allowed for certain areas within WTP for nonroutine operations such as equipment replacement or maintenance. Process rooms will ~~have a stainless steel liner on the floor and portions of the walls, and/or will be sealed with a protective coating. The LAW melter gallery area will have a protective coating on the concrete floor and walls~~. <u>be provided with secondary containment as required</u>. Systems within process rooms that manage mixed waste will have secondary containment (for example, the locally shielded melter and piping).

Caves

Caves will be located within process plants. Caves will typically be constructed with concrete walls thick enough to protect personnel from ~~radiological~~exposure to mixed waste. Caves will house mechanical handling equipment designed for remote operation and maintenance. They will generally have ~~sealed lead glass~~viewing windows and closed circuit television to allow observation of the cave operations and for overseeing remote maintenance. The cave floors and portions of the walls will ~~be lined with stainless steel~~ provided with secondary containment as required. The floor of the cave will be sloped to a collection sump to allow for collection and removal of accumulated liquid within the sump.

Berms

Concrete berms will be used at the LAW plant for the Condensate Collection Tank (LVP-TK-00001) and the two ~~outside pretreatment~~outdoor Process Condensate ~~T~~anks (RLD-TK-00006A/B) at the pretreatment plant. The berms will be of sufficient structural strength and height to contain the 100 ~~percent~~% of the volume of the largest tank plus, for the outdoor Process Condensate Tanks, the amount of precipitation that results from the 24-hour, 25-year storm event. A protective coating will be applied to the concrete pad and a portion of the berms to prevent contaminant penetration into the concrete. The containment system will be designed to allow for the discharge of storm water after visual or other testing.

Sump and Secondary Containment Drain Systems

The sump and secondary containment drain systems for the three process plants and the analytical laboratory are described in the following sections. Systems will monitor and collect liquids managed in the system. Sumps and secondary containment drains will be provided with a stainless steel liner or equivalent to act as the secondary containment. The sumps within the process areas will provide a low point for each secondary containment. ~~Wash rings may be provided within some process areas for equipment, vessel, and cell washing and decontamination operations.~~ The sumps will serve the following functions:

- Low point containment
- Removal of material by means of sump emptying ejectors or pumps
- Sampling of material by means of sump sampling ejectors

The following sections describe the type of sump used at the WTP and the secondary containment drains. ~~Tables 4-7 through 4-10 summarize WTP sump information by plant.~~

Dry ~~Type I~~Sumps

~~Mechanical process areas dealing with mechanical handling operations and containing dry material will be provided with Type I sumps. The sump and stainless steel lining will provide secondary containment for areas managing mixed waste. In addition, some LAW vitrification plant process rooms will be equipped with Type I sumps. The sump will provide a low point collection for the infrequent washing of machinery or the cave floor, for general cleanliness or decontamination prior to maintenance or deactivation. In some caves, these sumps will also~~

~~collect leakage from effluent system transfer pipes associated with or passing through the cave. Type I sumps are generally fitted with a leak detection device with alarm. Their contents are removed using mechanical or fluidic pumps. A diagrammatic representation of this sump type is shown in Figure 4A-125.~~Dry sumps are part of the secondary containment system provided for tank systems and wet miscellaneous treatment systems. Sumps are located at a low point in the secondary containment systems, and are equipped with leak detection instrumentation and corresponding alarm. Mechanical or fluidic pumps are used to remove liquid that may accumulate in the sump. Details of each sump are included in the sump data documents identified at the beginning of section 4.2.2.6.

~~**Type II Sumps**~~

~~These sumps will serve as the low point collection system for the stainless steel containment in a cell or mechanical cave where tank systems are present. The sump and stainless steel lining will provide secondary containment for the tanks and piping containing mixed waste. Type II sumps will be provided with a level detection and alarm device and a washout and emptying pump. Type II sumps are generally associated with a high radiation cell environment containing treatment tanks and piping. They are provided with maintenance-free fluidic emptying systems, such as ejectors or reverse flow diverters. These are wet sumps in which water will always be present to provide liquid level detection via a pneumacator and trigger high and low level alarms, if necessary. A diagrammatic representation of a cell sump is shown in Figure 4A-126.~~

~~It should be noted that a number of process pipe transfer duct drains will provide drainage back to a suitable cell or Type II sump. Waste pipes will be routed to various destinations within the plant. Some of these routes will require the use of concrete ducts, to provide radiation shielding and secondary containment coverage for the piping. The transfer ducts will be provided with stainless steel lining that drains to a low point within the duct, which will be drained to a suitable cell or wet mechanical sump to provide leak detection and sampling access. The transfer ducts will be provided with wash systems for area cleanup in the event of a pipe leak.~~

Secondary Containment Drains

Many of the bulges and some process ~~rooms~~areas will have secondary containment drains with remotely-removable plugs. This type of liquid collection system will be located in a low spot in the cell formed by the sloping floor. Liquid detection instrumentation will be present on the top of a remotely removable plug. After the plug is removed, liquid collected will gravity-drain to a collection vessel with a tank level indicator. The liquid managed could be waste released from a tank system, including ancillary equipment, or water used to wash the exterior of tanks or the walls of the room. ~~Liquid managed in the sump system could also be infrequently generated from the wash-down of cell walls or tank exteriors~~.

Design Requirements

The process cells, process rooms, or caves with mixed waste vessel or tank systems will be partially lined with stainless steel, which will cover the floor and extend up the sides of the process cell or cave to a height that can contain 100 percent of the volume from the largest tank within the process cell or cave. The height of the liners will not take into account fire suppression material, as the tanks will not manage ignitable waste. The concrete surfaces of the ceiling and the wall above the liner will be covered with a coating that is compatible with the waste feed to provide a splash shield zone. A sealant, compatible with the liner and the waste feed and wall coating, will be used to seal the liner-to-wall interface. Table 4-11 presents the calculated minimum liner height at the four process plants. Calculations for the liner size necessary in each cell and cave are available upon request.

A concrete berm with protective coating will be used for the pretreatment plant outdoor tanks. This secondary containment area will be capable of holding 100 % of the volume from the largest tank within the berm, plus the precipitation from a 25-year, 24-hour rainfall event, as required under WAC 173-303-640(4)(e)(i)(B).

The WTP uses consensus-recognized standards to ensure that the process cells, process rooms, caves, or berms provide secondary containment with sufficient strength, thickness, and compatibility with waste. The design includes an engineered structural base to protect the cells, caves, berms and tank systems against failure resulting both from excess force applied during catastrophic events or settlement, and from the stress of daily operation. In the event of a spill or release, the structural and foundation design for tank and process cells, process rooms, caves and berms will prevent released mixed waste from reaching the environment, and will safely contain the waste until it can be transferred to an appropriate collection tank.

4.2.2.6.2 Management of Release or Spill to Sump and Secondary Containment Drain Systems [D-2B(1)]

~~Sumps collect vessel leakage, vessel overflow, and decontamination solutions used in cell and equipment wash down. The sump and cladding are provided to satisfy secondary containment requirements for vessels and piping containing liquid mixed waste. The WTP uses two types of sumps for different process conditions. If a cell has a personnel entrance and houses vessels, tanks, and piping that manage dangerous waste, a Type I, single lined sump is placed in the cell. If the cell is a non-accessible process cell and has welded piping, a Type II sump is utilized. In Type II sumps, water is always present, to ensure that sump level indicators are working. Additionally, water provides a ventilation seal that prevents airflow from entering vessel overflow piping when a vessel overflows to a sump. Wash rings allow for sump wash down.~~ The WTP uses dry sumps as part of the secondary containment and leak detection systems.

Sumps are instrumented to inform the operator to investigate the cause of the liquid detected in the sump. Secondary containment systems are sloped to direct flow of leaks or spills to the sump. To remove liquid from the sumps in a timely fashion, sumps will be equipped with mechanical or fluidic pumps.

~~Sumps have three level thresholds: high operational control; high level alarm; and cell high-high level alarm. When these level thresholds are reached, the process control system informs the operator to investigate the cause of the rising liquid level. The cell liners are sloped to direct flow of leaks, spills, or liner wash solutions to the sump. Process cell liners are made of stainless steel or equivalent material that satisfies regulatory requirements, and design life requirements. To~~

~~remove liquid from the sumps in a timely fashion, sumps will be equipped with steam ejectors or pumps.~~

~~If a Type II sump is used, a small amount of water will be maintained in the sump during normal operating conditions. During normal operation, the water level will be maintained between the low and high operational controls. The operation control band limits will be set as close to each other as possible, and the alarm will be set above the high operational control to detect unusual level rises. The sump level will be constantly monitored. Typically, a moderate leak will generate a larger liquid volume than the amount of liquid that might be lost due to evaporation.~~

~~Abnormal rising of the liquid level in the sump will be investigated to determine its cause. In all cases, the cause for material in the sump will be determined. Mixed waste released from the primary system and collected in the sumps will be removed within 24 hours, or in as timely a manner as possible. If the released material cannot be removed within 24 hours, Ecology will be notified. After the sump content has been removed, the sump surfaces will be decontaminated using a wash-down system. Based on best management practices, a water flushing volume of approximately six sump volumes will be used to remove residual process water.~~

~~If a Type I sump is used, it will be equipped with a moisture probe to detect leakage. If liquid is detected in the Type I sump, similar procedures as described above for Type II sumps will be used to remove the content and decontaminate the sump surfaces.~~

~~If liquid is detected in the secondary containment drain, similar procedures to those described above for Type II sump will be used to remove drain contents and decontaminate drain surfaces.~~

Detection of liquid in the sump will be investigated to determine its cause. Mixed waste released from the primary system and collected in the sumps will be removed within 24 hours, or in as timely a manner as possible. If the released material cannot be removed within 24 hours, Ecology will be notified.

4.2.2.6.3 Additional Requirements for Secondary Containment [D-2b(2)]

Ecology considers the WTP dangerous waste storage tanks to have vault-type secondary containments that have either of the following configurations that the Department of Ecology has approved as equivalent to a coating/water stop system.:

- an impermeable interior coating that is compatible with the stored waste and a polymeric filler material at interior corners and construction joints that performs a function equivalent to a water stop,
- a welded stainless steel liner attached to walls and floors.

~~These requirements pertain to tanks in vault systems and double-walled tanks, which will not be used at the WTP. These requirements are not applicable at the WTP.~~

Ancillary equipment such as piping is addressed within section 4.2.2. Other types of ancillary equipment such as pumps, seal pots, and reverse flow diverters are ~~either located in stainless~~

~~steel lined process rooms/cells or caves or are designed to provide their own~~provided with secondary containment. Inspection of ancillary equipment is addressed in Chapter 6.

4.2.2.7 Variances from Secondary Containment Requirements [D-2c~~b(2)~~]

No variances from secondary containment requirements are sought for the WTP tank systems. Tank systems will be provided with secondary containment ~~in the form of partially steel-lined or protectively coated process cells or rooms, caves and berms,~~ as identified in the flooding volume documents described in the previous sections.

4.2.2.8 Tank Management Practices [D-2d]

The following provides the basic philosophy for the WTP vessel overflow systems. Three types of barriers exist to prevent overfill of process equipment: preventive controls, detectors, and regulators. Preventive controls promote controlled filling within normal process ranges. Detectors recognize if a vessel is being overfilled and alert an operator. Lastly, if preventive controls and detectors fail to stop overfill from occurring, regulators trip a control sequence that stops inflow and/or initiates outflow. The principal design concept to control vessel overflow is to prevent an overflow from occurring. The engineering design will minimize the likelihood of tank, ancillary equipment, and containment system overflows, and over-pressurization, ruptures, leaks, corrosion, and other failures.

In general, overflows will be prevented by inventory control in conjunction with level monitoring. The fluid levels in a vessel will be maintained within low- and high-level ranges. Appropriate alarm settings will be used to note deviations from the designed settings. Automatic trip action will be designed to shut down feed to the vessel when the high-level settings are exceeded. These automatic trip actions will be provided for vessels with the potential for high operational and environmental impact in case of an accident or release.

Most of the WTP tank systems will be designed to incorporate minimal or zero maintenance requirements and will be based on a design life of approximately 40 years. ~~Intrusively,~~The design emphasis of zero maintenance will minimize the likelihood of spills and overflows in the tank systems. In the event that the process controls fail to prohibit vessel overfilling, engineered overflows will be provided to prevent liquid from entering the vessel ventilation systems. ~~Non pressure~~Vessels that are nominally operating at atmospheric pressure will have a suitable gravity or engineered overflow system, unless an overflow can be shown not to be possible. Vessels or systems that normally operate at above atmospheric pressures will not be provided with overflows.

The following principles apply when designing an engineered overflow system:

- The overflow system for vessels must be instantaneously and continuously available for use.
- Overflowed process streams must be returned to the waste treatment process.
- Overflow systems must meet the requirements of WAC 173-303, *Dangerous Waste Regulations*, Section 640, Tank Systems. In meeting these requirements, overflowing direct to the cell floor will only be considered as the last overflow in a cascaded system. Where an

overflow is from a vessel to the cell, the overflow system will maintain segregation of the cell and vessel ventilation systems. The compatibility of the overflowing liquid and the recipient vessel will be considered.

- A vessel overflow line is sized to handle the maximum inflow to the vessel without the liquid level in the overflowing tank reaching an unacceptably high level. No valves or other restrictions are permitted in the overflow line. This line is also designed to prevent the buildup of material that could cause blockages.
- The overflow receiver is sufficiently sized to contain the overflow.
- Inspections will be performed on the various tank and overflow systems, using the example schedules described in DWP Chapter 6.

4.2.2.9 Labels or Signs [D-2e]

~~Accessible~~Tanks ~~(i.e., the Pretreatment plant process condensate vessels, V45028A and V45028B) holding~~managing mixed or dangerous waste will be labeled according to the requirements of DWP permit conditions DWP III.10.E.5.e. for routinely non-accessible tanks, and DWP III.10.E.5.f. for tanks not addressed in DWP III.10.E.5.e.~~.will be labeled with stainless steel engraved nameplates.~~ They will inform employees and emergency personnel of the types of waste present, warn of the identified risks, and provide other pertinent information.

4.2.2.10 Air Emissions [D-2f] and [D-8]

This section describes air emissions from vessel ventilation systems and reverse flow diverter exhausts. Organic emissions from vents associated with evaporator or distillation units are also discussed.

4.2.2.10.1 Tank System Emissions [D-2f]

Most of the tanks will be connected to a vessel ventilation system to collect vapors. Vessel vents will be located on major tanks, breakpots, and other small vessels. Exhaust from reverse flow diverters and pulse jet mixers will also be collected.

4.2.2.10.2 Process Vents [D-8a]

The air emission regulations, specified under WAC 173-303-690 and 40 CFR 264 Subpart AA, apply to process vents associated with distillation, fractionation, thin-film evaporation, and air or steam stripping operations that manage mixed waste with total organic carbon concentrations of at least 10 parts per million by weight. The WTP does not use these regulated processes; therefore, this regulation does not apply to the WTP.

4.2.2.10.3 Equipment Leaks [D-8b]

Regulations provided in WAC 173-303-691 and 40 CFR 264 Subpart BB contain the "Air Emission Standards for Equipment Leaks". These air emission standards do not apply to the WTP because waste feed entering the WTP contains less than 10% total organic carbon by weight and is excluded under 40 CFR 264.1050(b).

4.2.2.10.4 Tanks and Containers [D-8c]

The regulations specified under WAC 173-303-692 and 40 CFR 264 Subpart CC do not apply to the WTP mixed waste tank systems and containers. These tanks and containers qualify as waste management units that are "used solely for the management of radioactive dangerous waste in accordance with applicable regulations under the authority of the Atomic Energy Act and the Nuclear Waste Policy Act" and are excluded under 40 CFR 264.1080(b)(6). Containers bearing nonradioactive, dangerous waste, such as maintenance and laboratory waste, that is not excluded under 40 CFR 264.1080 (b)(2) or 40 CFR 264.1080(b)(8), will comply with the tank and container standards specified under 40 CFR 264 Subpart CC.

4.2.2.11 Management of Ignitable, Reactive and Incompatible Waste in Tanks [D-2g] and [D-2h]

Mixed waste from the DST system unit will initially be designated as both ignitable (D001) and reactive (D003). The D001 and D003 waste numbers will be as described in the waste analysis plan in DWP Attachment 51, ~~Chapter 3~~Appendix 3A. The vessels will be located in a manner that meets the National Fire Protection Association (NFPA) buffer zone requirements for vessels, as contained in Tables 2-1 through 2-6 of the *NFPA-30 Flammable and Combustible Liquids Code* (NFPA 1981). The vessels will be designed to store the waste in such a way that it will be protected from materials or conditions that could cause the contents to ignite or react. Vessel contents will be constantly mixed and will be actively vented to process stacks, which will be equipped with vapor collection and treatment systems that will manage emissions. Further information on waste numbers is contained in DWP Attachment 51, ~~Chapter 3~~Appendix 3A.

Ignitable or reactive waste may be generated from laboratory or maintenance activities. This waste will be accumulated and managed in compliance with regulatory requirements, in approved containers. Potentially incompatible waste generated from laboratory or maintenance activities will not be stored in the tank systems.

A potential for incompatibility may exist, for example when nitric acid is used to elute waste components from ion-exchange column resins that were previously regenerated with sodium hydroxide. To minimize a reaction, water flushes will be performed between batches.

Process reagents that could react with waste in the tank systems will be stored in areas that are separated by physical barriers from process tanks. Potentially incompatible wastes generated from laboratory or maintenance activities will not be stored in proximity to each other in the tank systems.

4.2.3 LAW and HLW Miscellaneous ~~Unit~~Treatment Sub-Systems [WAC 173-303-680 and WAC 173-303-806(4)(i)]

~~This section describes LAW and HLW melter operations conducted at the WTP. The thermal treatment miscellaneous units will be melters and will be used to immobilize dangerous and radioactive waste constituents by vitrification. There will be three miscellaneous units in the LAW vitrification plant (LAW melters 1, 2, and 3) and one miscellaneous unit in the HLW vitrification plant (HLW melter).~~

The LAW vitrification system and HLW vitrification system consist of the vitrification melters, offgas treatment equipment, and associated equipment. The melters immobilize mixed waste in a glass matrix. The LAW vitrification systems and the HLW vitrification system contain two melters each. The following sections provide additional information on the vitrification systems.

Other miscellaneous treatment sub-systems, and their associated process control features, are described in section 4.2.2.

4.2.3.1 Melter Capacity and Production

For the ~~LAW~~melters, throughput is defined on the basis of quantity of glass waste produced. In turn, the quantity of glass waste produced depends on the degree to which the feed can be incorporated into the glass ~~waste~~matrix. The maximum design throughput of the LAW Melter systems will be approximately 15 metric tons per day of glass waste for each melter and approximately ~~45~~30 metric tons per day ~~as maximum possible~~throughput ~~for the LAW vitrification plant~~. The ~~maximum operating~~production rate of the HLW Melters is approximately 3 metric tons per day for each melter and approximately melter ~~1.5~~6 metric tons per day throughput.

4.2.3.2 Description of Melter Units [WAC 173-303-806(4)(i)(i)]

The LAW Melter systems are located in ~~a~~the melter galleries and the HLW Melters are housed within the melter caves as ~~shown~~depicted in the general ~~layout~~arrangement plan and section permit drawings, which are found in DWP Attachment 51, Appendix 9.4 for the LAW vitrification plant and Appendix 10.4 for the HLW vitrification plant.~~Appendix 4A~~ The following subsections provide detailed descriptions of the melter units.

Low-Activity Waste Melter Units

Figure 4A-48 provides a sketch of an LAW Melter. ~~The~~Each LAW Melter (LMP-MLTR-00001/2) is a rectangular furnace, lined with refractory material, with an outer steel casing. An additional outer steel casing with access panels will be provided to enclose the LAW Melter. This outer steel casing is designed to provide local shielding and containment. Each LAW Melter has a nominal design capacity of approximately 15 metric tons of glass waste per day. Each will have a molten glass surface area of approximately 108 ft^2. Each of the ~~three~~two LAW melters has external dimensions of approximately 26 × ~~19~~21 × 16 ft high, and weighs approximately ~~450~~270 metric tons empty and ~~475~~290 metric tons with glass. The operating temperature of the melter is between ~~950~~1100 °C and ~~1250~~1200 °C.

The locally shielded LAW Melter (LMP-MLTR-00001/2) will be operated and maintained in a personnel access area. The melter will be maintained at a lower pressure than the surrounding room to prevent escape of contaminants. Consumable melter parts will be replaced through access panels. The melters will be transported in and out of the gallery on a rail system. A transporter will move the melters to and from the LAW vitrification plant.

The melter refractory package is designed to serve as a mechanical, thermal, and electrical barrier between the molten glass residing in the melter and the melter shell.

The refractory package is housed in a steel shell and provides ~~ultimate~~containment for the molten glass. Active cooling on the exterior of the melter is provided by water jackets. The water jackets will be in the intermediate loop of a two-loop system that will transfer heat from the LAW Melter through heat exchangers to cooling towers. The intermediate loop containing the water jacket will be a closed system that isolates the water circulating through the water jacket from the water in the cooling water loop circulating to the cooling tower. ~~Radioactive~~Mixed waste material leaking into the intermediate loop cooling water will be prevented from becoming an inadvertent discharge via the cooling tower. The refractory package will provide adequate containment if there is a temporary loss of cooling. Penetrations in the melter system are sealed using appropriate gaskets and flanges. This system is designed for plenum temperatures of up to 1,100 °C. The LAW melter lid is composed of steel and refractory material layers.

Each LAW Melter (LMP-MLTR-00001/2) will use two independent discharge chambers. An air lift pumps molten glass from the bottom of the melter pool, through a riser, into a discharge chamber, and pours it into an ILAW container. The ILAW is then allowed to cool, forming a highly durable borosilicate glass waste form within the container.

~~Waste~~Spent LAW Melters will initially be managed within the LAW melter gallery containment building unit. ~~Waste~~Spent LAW Melters will be removed from the melter gallery and transported using a transport and rail system. If necessary, the melter exterior surfaces will be decontaminated ~~The waste melters will be stored at the melter storage area 1 or 2 prior to disposal at~~prior to transfer to a Hanford Site TSD unit.

High-Level Waste Melter Units

Figure 4A-54 provides a sketch of an HLW Melter. Each ~~The~~HLW Melter (HMP-MLTR-00001/2) is a rectangular furnace, lined with refractory material, with outer casings. They have four compartments: a glass tank, two discharge chambers, and a plenum just above the glass tank. The tanks are lined with refractory material designed to withstand corrosion by molten glass.

The HLW Melter systems consist of ~~one~~two melter~~s with the capability for a second melter~~. Each HLW Melter (HMP-MLTR-00001/2) is designed for glass production rates up to 3 metric tons per day (MTG/d). ~~The HLW melter system has a nominal design capacity of 1.5 metric tons of glass waste per day and a maximum capacity of three metric tons per day~~ The normal operating temperature of the melter is between 1100 °C and 1200 °C. The HLW Melters have a molten glass surface area of approximately 40 ft^2. The HLW Melters have external dimensions of approximately ~~12 x 15 x 12 ft~~11 ft high × 14 ft deep × 14 ft wide. The glass contained in a full HLW Melter has a volume of approximately 145 ft^3 and weighs approximately 9.1 metric tons. An entire melter, including the supporting structure and transport mechanism, weighs approximately 90 metric tons empty and approximately 99 metric tons full.

The HLW Melters (HMP-MLTR-00001/2) have been designed to be remotely operated and maintained. Remote maintenance will be performed by a power manipulator, overhead crane, and auxiliary hoist, or by through-wall master-slave manipulators. The melter will be positioned within the HLW vitrification plant for ease of access and viewing of both discharge chambers during operations, and for viewing access to the melter lid to facilitate removal and replacement of subcomponents, if needed. A rail and bogie transport system will facilitate remote removal and replacement of the entire melter structure.

The HLW Melters (HMP-MLTR-00001/2) will use a refractory package similar to the LAW melter to contain the molten glass. The refractory package is designed to serve as a mechanical, thermal, and electrical barrier between the molten glass inside the melter and the melter shell.

The HLW Melters will also use an ~~steel~~outer shell, which, with the refractory package, will contain the molten glass and melter offgas. Active cooling on the exterior of the melter will be provided by a water jacket, which will be in a two-loop system that will transfer heat from the HLW Melter through heat exchangers to cooling towers. The loop containing the water jacket will be a closed system that isolates the water circulating through the water jacket from the water in the cooling water loop circulating to the cooling tower. ~~Radioactive~~Mixed waste material leaking into the intermediate loop cooling water will be prevented from becoming an inadvertent discharge through the cooling tower. The refractory package will provide adequate containment should there be a loss of cooling. The HLW Melter lid will be constructed of a steel outer shell and insulated from the melter plenum by refractory material.

The HLW Melter will use two independent discharge chambers. Discharge will be achieved by transferring the molten glass from the bottom of the melter pool, through a riser, from which it will be poured into a stainless steel IHLW ~~container~~canister. Glass waste transfer will be accomplished through air lifting. The IHLW will then be allowed to cool, forming a highly durable borosilicate glass waste form.

Waste HLW Melters will be removed from the melter cave and placed in an overpack. The spent melter will be treated as newly generated waste, and will initially be managed within the HLW melter containment buildings. If necessary, the overpack will be decontaminated using a dry process. Waste HLW Melters will be stored in the~~HLW or LAW out of service~~ melter storage facility.

4.2.3.3 Automatic Waste Feed Cut-Off System

The LAW and HLW Melters will be equipped with the ability to cut off waste feed. Automatic waste feed cut-off systems terminate feed to the Melter if a specified operating condition is exceeded. This design approach is consistent with the WAC 173-303-680 regulatory requirements.

The LAW (LMP-MLTR-00001/2) and HLW (HMP-MLTR-00001/2) Melters are fed via air displacement slurry pumps that utilize pressurized air as the motive force. ~~It supplies~~These pumps supply feed to the melters in slugs that act to keep lines from plugging. The feed is injected into the melters through the feed nozzles on top of the Melter creating a "cold cap", where waste feed undergoes several physical and chemical changes. The glass product in the melter is then "air lifted" through the discharge chamber and into the glass container. Melter offgas is generated from the vitrification of LAW and HLW of which the rate of generation is dynamic and not steady state. The offgas is then carried away and treated via a dedicated offgas system.

The melter systems are designed to minimize the need for automatic waste feed cut-off functions. Control of melter level and plenum pressure, process alarming, and optimized operating procedures will be in place to reduce the occurrences of interlocking. Given the processing speeds and the relatively slow rates of change in the operating states of the melter, operators~~ions~~ should have adequate time to react to upset conditions. An example of the slow rate of change can be seen in the volume of feed per air displacement slurry pump feed cycle when increasing melter level. Each pump cycle adds approximately 1 gallon of slurry into the melter. At 1 gallon of volume, the liquid level rises no greater than 0.01 in. inside the melter. This provides ample time for operator response.

Previous operating experience with similar melters has shown that two types of operating conditions existed that warranted automatic waste feed cut off: 1) high melter pressure and 2) high melter glass level. These interlocks have been sufficient to allow continued melter operations without inadvertent feed cut off signals, yet provide a sufficient safety margin.

4.2.3.4 Offgas Treatment System

The offgas treatment system will remove steam, aerosols, entrained particulates, decomposition products, and volatile contaminants that are generated from the vitrification processes and the vessel ventilation systems. The principal constituents contained in the melter offgas stream are as follows:

- ~~Air in-leakage and purges into the melter~~
- ~~Water vapor evaporated from the melter feed~~
- ~~Acid gases generated from anion decomposition (i.e., nitrogen oxide and sulfur oxide)~~
- ~~Aerosols from dried melter feed and melter cold-cap reaction solids~~
- Nitrogen oxides from decomposition of metal nitrates in the melter feed
- Chloride, fluoride, and sulfur as oxides, acid gases, and salts
- Particulates and aerosols
- Entrained feed material and glass

A detailed description of the current offgas treatment trains for the LAW (LMP-MLTR-00001/2) and HLW (HMP-MLTR-00001/2) Melters is provided in sections 4.1.4 and 4.1.5, respectively.

4.2.3.5 Miscellaneous Unit Emissions Performance Standards~~Maximum Achievable Control Technology (MACT) Standards~~

The WTP melter systems are thermal treatment units classified as miscellaneous units in Washington Administrative Code (WAC) 173-303-680. The dangerous waste regulations require that permits for miscellaneous units include such terms, conditions, and provisions that are necessary to protect human health and the environment and are appropriate for the miscellaneous unit being permitted. Ecology has determined that regulations that are most appropriate to apply to the melters and offgas systems (melter systems) are found in the tank requirements (WAC 173-303-640) and applicable sections of the incinerator requirements (WAC 173-303-670) and 40 CFR Section 63.1203. As applied to the melter systems, the tank regulations primarily provide requirements for structural integrity, material compatibility, secondary containments, etc. The incinerator regulations primarily provide operational requirements for parameters such as temperature, pressure, feed rate, demonstration testing, and performance standards, etc. Ecology determined and incorporated into the final WTP Dangerous Waste Permit issued in September 2002 the standards specified in 40 CFR Section 63.1203 in the following table apply to the WTP melter system miscellaneous units. ~~These standards are known as Maximum Achievable Control Technology (MACT) and were promulgated by the EPA in September 1999 (64 FR 52828). In April 2001, Ecology provided guidance to the WTP regarding the regulatory standards they will be applying to the melter systems, including certain requirements contained in the MACT rule for hazardous waste combustors (Ecology 2001). The requirements are outlined in the following:~~

Miscellaneous Unit Emissions Performance Standards	
Pollutant	**Ecology-directed requirement**
PODC~~Principle Organic Dangerous Constituents~~	99.99% DRE
Dioxins and Furans	0.20 ng TEQ/dscm
Mercury	45 µg/dscm
Lead and Cadmium	120 µg/dscm, combined emissions
Arsenic, Beryllium, Chromium	97 µg/dscm, combined emissions
Carbon Monoxide and Hydrocarbons	Carbon monoxide not in excess of 100 ppmv over an hourly rolling average, dry basis, and hydrocarbons not in excess of 10 ppmv over an hourly rolling average, dry basis, and reported as propane, at any time during the DRE test runs or their equivalent, or hydrocarbons not in excess of 10 ppmv, over an hourly rolling average, dry basis, and reported as propane
Hydrochloric Acid and Chlorine	21 ppmv, combined emissions, expressed as

Miscellaneous Unit Emissions Performance Standards	
Pollutant	**Ecology-directed requirement**
Gas	hydrochloric acid equivalents, dry basis
Particulate Matter	34 mg/dscm

- ~~Emissions corrected to a 7% oxygen basis~~
- TEQ is dioxin/furan toxicity equivalence defined in 40 CFR 63.1201(a)
- dscm is dry standard cubic meter
- ppmv is parts per million by volume
- Rolling average is the average of all 1- minute averages over the averaging period [40 CFR 63.1201(a)]

~~On July 24, 2001, the United States Court of Appeals, District of Columbia (D.C.) Circuit, vacated the MACT rule for hazardous waste combustors and ordered the EPA to rewrite the emission standards (United States Court of Appeals, D.C. Circuit 2001a). On October 26, 2001, the EPA, together with other litigants, filed a joint motion asking the Court to delay issuance of a mandate that would vacate the MACT emission standards for hazardous waste combusters (United States Court of Appeals, D.C. Circuit 2001b). On November 1, 2001, the Court granted the joint motion. As a result, the mandate to vacate the emission standards has been stayed to February 14, 2002~~. DOE intends that the melter systems be designed and constructed so that they operate in compliance with the appropriate and applicable standards. Environmental performance demonstrations during cold commissioning of the HLW and LAW vitrification plants will be used to verify compliance with the DRE and other as applicable air emission standards. ~~Ecology's guidance also indicated that some~~ The final WTP Dangerous Waste Permit issued in September 2002 also requires periodic demonstration testing will ~~need to~~ be performed after the WTP has begun processing radioactive wastes (Ecology, 2001).

~~The WTP contractor has undertaken a review of the requirements outlined above to determine the feasibility of implementing them in a radioactive environment. A proposal regarding compliance with the MACT requirements will be prepared by the date identified in the DWPA Completion Schedule.~~

4.2.3.6 Physical and Chemical Characteristics of Waste [WAC 173-303-680(2)(a)(i)]

A description of the waste characteristics of the LAW and HLW feeds is presented in DWP Attachment 51, Chapter 3 (see Appendix 3A). The immobilized waste generated by the vitrification processes will be in the form of glass that maintains its chemical and physical integrity during long-term storage. The waste analysis plan (Appendix 3A) describes the types and frequency of analysis that will be performed on the glass waste.

4.2.3.7 Treatment Effectiveness Report [WAC 173-303-806(4)(i)(iv)]

A treatment effectiveness report evaluating the performance of the miscellaneous ~~units~~treatment sub-systems, and their effectiveness in treating the LAW and HLW, ~~is provided~~will be located in DWP Attachment 51,~~Appendicies~~ Appendix 9.~~16~~ for LAW and Appendix 10 for HLW.

~~Sampling and analyses to be performed on the glass waste are described in the waste analysis plan (Appendix 3A). Air monitoring and analysis requirements are addressed in the WTP air permits.~~ The report will use the results of the environmental performance demonstration and the risk assessment activities to document treatment effectiveness of miscellaneous treatment sub-systems.

4.2.3.8 Environmental Performance Standards for Melter Systems [WAC 173-303-680(2)]

An environmental performance demonstration will be conducted to demonstrate the efficiency of the LAW and HLW Melter systems and their respective air pollution control systems. Emissions from the LAW and HLW systems will be sampled and analyzed during an environmental demonstration performed during cold commissioning. The data developed during the environmental performance demonstration will support the screening-level risk assessment, which will support the development of environmental performance standards for the LAW and HLW Melter systems.

The operational activities of the WTP include methods intended to ensure proper performance of equipment and processes. These methods include sampling of materials, use of direct process controls, development of equipment life specifications and ongoing maintenance.

4.2.3.8.1 Protection of Groundwater, Subsurface Environment, Surface Water, Wetlands and Soil Surface [WAC 173-303-680(2)(a) and (b)]

The LAW Melters will be located in the LAW melter gallery (L-0112) within the LAW vitrification plant. The HLW Melters will be located in the HLW melter caves (H-0117, H-0106) within the HLW vitrification plant. Both plants are designed to comply with standards that ensure protection of the surface and subsurface environments. The vitrification plants will be completely enclosed and are designed to have sufficient structural strength and corrosion protection to prevent collapse or other structural failure. In addition, the melter systems, melter feed systems, and related piping will be provided with secondary containment, to minimize the potential for release. The LAW melter gallery (L-0112) and the HLW melter caves (H-0117, H-0106) will be permitted as containment buildings and are described in section 4.2.4.

Floors within the vitrification plants will be protected in a manner consistent with the intended usage of the space. ~~The process room floor and walls of the LAW melter gallery will be protectively coated.~~ The floor and portions of the walls of HLW Melter cave will be partially lined with stainless steel. Nonradioactive materials usage areas requiring heavy equipment will have concrete floors with hardener and sealer finishes.

The *Hanford Facility Dangerous Waste Permit Application General Information Portion*, section 5.4 (DOE-RL 1998), provides climatological data, topography, hydrogeological and geological characteristics, groundwater flow quantity and direction, groundwater quality data, and surface water quantity and quality data for the area around the WTP.

4.2.3.8.2 Protection of the Atmosphere [WAC 173-303-680(2)(c)]

A risk assessment will be performed to evaluate the impacts of the WTP emissions on human and ecological receptors. Actual offgas emissions will be measured during an environmental performance demonstration that will be performed as part of the WTP commissioning activities. The data will be used during a screening-level risk assessment that will be performed to determine ecological and human health risk. The emissions data and the results of the screening level risk assessment will be used to establish operating conditions for the melters that do not endanger human health and the environment.

4.2.3.9 Approach to Risk Assessment [WAC 173-303-680(2)(c)(i) through (vii)]

A screening level risk assessment is being conducted to evaluate ~~the environmental impacts~~any possible human health and ecological risk posed by the thermal treatment of ~~miscellaneous units~~mixed wastes. The risk assessment will provide information about the potential terrestrial, aquatic, and food pathways for exposure of human and ecological receptors to dangerous waste constituents. This risk assessment will present the quantitative methods, detailed assumptions, and numerical parameters that will be used to estimate the nature, extent, and magnitude of potential ~~impacts~~risks from operation of the WTP~~and will identify the guidance documents used in performing the risk assessment~~. The primary regulatory guidance followed for this risk assessment is found in the *Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities* (EPA 1998a) and the *Screening-Level Ecological Risk Assessment Protocol for Hazardous Waste Combustion Facilities* (EPA 1999a)

Treated air emissions through the stack will be the only planned direct releases into the environment from the WTP. Other waste streams will be transferred to a permitted facility and will not be released directly into the environment. Thus, the overall risk assessment process will focus primarily on air emissions.

Major components of the human health and ecological risk assessment process for evaluating airborne emissions will be as follows:

- Risk assessment work plan
- Pre-demonstration test risk assessment
- Final risk assessment

The overall approach for the risk assessment will be to identify potential risks associated with ~~two exposure scenarios~~various receptors, their locations, exposure pathways, and activity patterns in two broad exposure scenarios, as follows:

- Plausible exposure scenario
- Worst-case exposure scenario

~~The worst-case exposure scenario will be based on worst-case assumptions regarding the location of receptors, exposure pathways, and activity pattern~~. The plausible exposure scenarios will be based on ~~more realistic assumptions regarding the location of receptors. It will reflect current uses of the surrounding land and habitats, and reasonable assumptions about future uses of the land.~~ where potential receptors currently exist or may reasonably be expected to exist within the foreseeable future. The worst-case assumptions will be based on locations of maximum concentration even though it is not expected that such receptors will ever actually exist at these locations. Both scenarios will reflect current uses of the surrounding land and habitat and reasonable assumptions about future uses of the land and habitat.

During the environmental performance demonstration, emission samples will be collected and analyzed, and the data will be used to evaluate risk to the human ~~and wildlife~~population and ecological (such as wildlife) receptors. Operating conditions will be established for the WTP, which limit risks to human health and the environment to acceptable levels.

4.2.4 Containment Buildings

This section describes how these units are designed and operated, in accordance with the requirements of WAC 173-303-695, which incorporates 40 CFR~~Part~~ 264 Subpart DD, "Containment Buildings", by reference. Regulatory citations in this section list the applicable section of the CFR to make it easier for readers to find the requirement. A typical containment building is illustrated in Appendix 4A, Figure 4A-59.

There ~~will be twelve~~are twenty containment buildings at the WTP: ~~three~~four located within the pretreatment plant; ~~three~~six in the LAW vitrification plant; and ~~six~~ten in the HLW vitrification plant. The regulated units are:

- Pretreatment hot cell containment building (P-0123)
- Pretreatment maintenance containment building (PM0124, P-0121A, P-0122A, P-0123A, P-0124, P-0124A, P-0125, P-0125A, P-0128, P-0128A)
- Pretreatment ~~air filtration~~filter package maintenance containment building (P-0223)
- Pretreatment air filter package containment building (P-0335)
- LAW LSM gallery containment building (L-0112)
- ILAW container finishing containment building (L-0109B,L-0109C, L-0109D, L-0109E, L-0115B, L-0115C, L-0115D, L-0115E, L0116A)
- LAW vitrification plant consumable import/export containment building (L-0119B)
- LAW vitrification plant C3 workshop containment building (L-226A)
- LAW pour cave containment building (L-B015A, L-B013C, L-B013B, L-B011C, L-B011B, and L-B009B)
- LAW container buffer storage containment building (L-B025C, L-B025D)
- HLW melter cave no. 1 containment building (H-0117, H-0116B, H-0310A)
- HLW melter cave no. 2 containment building (H-0106, H-0105B, and H-0304A)

- IHLW ~~container weld containment building~~canister handling cave containment building (H-0136)
- IHLW ~~container~~canister ~~decontamination~~ swabbing and monitoring ~~building~~cave containment building (H-0133)
- HLW vitrification plant C3 workshop containment building(H-0311A, H-0311B)
- HLW ~~vitrification plant air filtration containment building~~filter cave containment building (H-0104)
- ~~HLW vitrification plant drum transfer tunnel containment building~~
- HLW pour tunnel no. 1 (H-B032)
- HLW pour tunnel no. 2 (H-B005A)
- HLW drum swabbing and monitoring area (H-0126A, H-0126B, H-B028)
- HLW waste handling area (H-410B, and H-411)

Table 4-12 summarizes the units within the WTP. The following figures and drawings found in DWP Attachment 51~~Appendix 4A~~ provide further detail for the WTP containment buildings:

- ~~Typical system~~Figure 4A-59 depicting common features of containment buildings
- ~~Simplified~~General arrangement figures and drawings showing locations of containment buildings
- Waste management area figures showing containment building locations to be permitted

Control of fugitive emissions from containment buildings is described in *Fugitive Emissions Control Description* (24590-WTP-PER-HV-02-001).

The following sections address each of the ~~twelve~~ containment buildings.

4.2.4.1 Pretreatment Hot Cell Containment Building (P-0123)

The first containment building in the pretreatment plant is located in the central portion of the pretreatment plant and stretches nearly the entire length of the building.

The process equipment is remote handled in case of failure and is removed by an overhead crane or powered manipulator. Manipulators assist in the decontamination and remote repair. The unit also contains a crane and powered manipulator repair area. The failed equipment is placed inside disposal boxes and transported through a series of airlock and shield doors to a truck load-out area on the outside of the building.

Process equipment, such as pumps, valves, and jumpers, ~~and filters~~ are located in this containment building. Typical waste management activities performed in this containment building include the removal and staging of failed, remote-handled process equipment prior to decontamination, repair, and/or packaging of waste for disposal. Jumpers connecting process equipment may leak waste when the jumper connection is broken. Although some decontamination capability is present in the pretreatment hot cell containment building, some quantities of waste, especially solids, will remain following decontamination. The design features associated with the pretreatment hot cell containment building, discussed below, ensure the capability to manage residual waste from process jumper leakage throughout the 40-year design lifetime of the pretreatment plant.

Pretreatment Hot Cell Containment Building Design

The pretreatment hot cell containment building is designed as a completely enclosed area within the pretreatment plant. It is designed to prevent the release of dangerous constituents and their exposure to the outside environment. The design and construction of the hot cell and the pretreatment plant exterior will prevent water from running into the plant. The approximate dimensions of the unit are summarized in Table 4-12.

Pretreatment Hot Cell Containment Building Structure

The pretreatment hot cell containment building will be a concrete-walled structure fully enclosed within the pretreatment plant. Therefore, structural requirements for the containment building will be met by the design standards of the pretreatment plant. The roof of the pretreatment plant will consist of metal roofing, roof insulation, and vapor barrier. Rainwater run-off will be collected by roof drains and drainage systems with overflow roof drains. The design will ensure that the unit has sufficient structural strength to prevent collapse or failure. DWP Attachment 51, Supplement 1 provides documentation that the seismic requirements for the pretreatment plant ~~are presented in the RPP WTP Compliance with~~meet or exceed the Uniform Building Code Seismic Design Requirements~~identified in Supplement 1~~.

Pretreatment Hot Cell Containment Building Materials

The pretreatment hot cell containment building will be constructed of steel-reinforced concrete. The interior floor and a portion of the walls of the unit will be partially lined with stainless steel. The balance of the walls will have an impervious coating. ~~The roof of the pretreatment plant will consist of metal roofing, roof insulation, and vapor barrier. Rainwater run-off will be collected by roof drains and drainage systems with overflow roof drains~~.

Use of Incompatible Materials in the Pretreatment Hot Cell Containment Building

A partial stainless steel liner will be provided for this unit. Stainless steel will be compatible with the equipment waste that will be managed, which will include failed pumps, ultrafilters, and valves containing a minimal amount of waste constituents. Activities in the unit will include, but not be limited to, decontamination, size reduction, and packaging the waste components into drums or waste boxes. Treatment reagents that could cause the liner to leak, corrode, or otherwise fail will not be used within the unit.

Primary Barrier Integrity in the Pretreatment Hot Cell Containment Building

The pretreatment hot cell containment building is designed to withstand loads from the movement of personnel, wastes, and handling equipment. The seismic design criteria identified in DWP Attachment 51, Supplement 1 ensures that appropriate design loads, load combinations, and structural acceptance criteria are employed at the WTP.

Certification of Design for the Pretreatment Hot Cell Containment Building

Prior to initial receipt of dangerous and mixed waste startup of operations, a certification by a qualified registered professional engineer that the pretreatment hot cell containment building meets the design requirements of 40 CFR 264.1101(a), (b), and (c) will be obtained.

Operation of the Pretreatment Hot Cell Containment Building

Operational and maintenance controls and practices will be established and followed to ensure containment of the waste within the pretreatment hot cell containment building as required by 40 CFR 264.1101(c)(1).

Maintenance of the Pretreatment Hot Cell Containment Building

The partial stainless steel lining of the unit will be constructed and maintained in a manner that will be free of significant cracks, gaps, corrosion, or other deterioration. The partial stainless steel liner will remain free of corrosion or other deterioration because it is compatible with materials that will be managed in the containment building. The failed equipment that will be managed in the containment building unit will be compatible with stainless steel. Only decontamination chemicals that are compatible with the liner will be used.

Measures to Prevent Tracking Wastes from the Pretreatment Hot Cell Containment Building

The pretreatment hot cell containment building is designed to isolate failed equipment from the accessible environment and to prevent the spread of contaminated materials. Very little dust is expected to be generated in the unit. Personnel access to the unit, which is classified as a C5 contamination area, will be restricted~~due to radiological concerns~~. Waste leaving the unit may or may not be enclosed within containers. ~~If necessary, these containers may be decontaminated in the unit prior to transportation to another permitted storage area~~Equipment leaving the unit will be decontaminated before being released for removal.

~~Control of Fugitive Dust from the Pretreatment Hot Cell Containment Building~~

~~The following measures will be used to prevent fugitive dust from escaping the pretreatment hot cell containment building:~~

- ~~A cascading air flow from areas of least to greatest potential contamination (i.e., C2 to C3 to C5)~~
- ~~Greater negative air pressure in the unit compared to adjacent C2 units, to pull air into the unit and prevent backflow~~
- ~~Intake air through controlled air in-bleed units, with backflow prevention dampers, and air gaps around shield doors sized to prevent backflow~~
- ~~Dual HEPA filtration of exhaust air before discharge to the atmosphere through a monitored stack~~
- ~~A multiple fan extraction system designed to maintain negative pressure and cascading air flow, even during fan maintenance and repair~~

Procedures in the Event of Release or Potential for Release from the Pretreatment Hot Cell Containment Building

The design and operation of the unit makes it very unlikely that releases will occur. The design and operational measures will minimize the generation of dust and contain it within the unit. The ventilation system will also use negative air pressure to keep contamination from spreading ~~of lesser contamination, and will use two-stage HEPA filtration to reduce the release of particles. The ventilation system is designed with backup HEPA filters to provide redundant controls and to facilitate repairs or replacement.~~ to areas of lesser contamination. Offgas will be routed to the pretreatment ventilation system.

Inspections will identify conditions that could lead to a release. Such conditions will be corrected as soon as possible after they are identified. In the unlikely event that a release of dangerous wastes from the containment building is detected, actions required by 40 CFR 264.1101(c)(3)(i) through (iii) will be taken. Specific administrative and operating methods that will be used to satisfy this requirement will be developed prior to initial receipt of dangerous and mixed waste. These methods will be followed to repair conditions that could lead to a release.

Inspections of the Pretreatment Hot Cell Containment Building

An inspection program will be established to detect conditions that could lead to a release of wastes from the pretreatment hot cell containment building. The inspection and monitoring schedule and methods that will be used to detect releases from the unit are included in DWP Attachment 51, Chapter 6.

4.2.4.2 Pretreatment Maintenance Containment Building (PM0124, P-0121A, P-0122A, P-0123A, P-0124, P-0124A, P-0125, P-0125A, P-0128, P-0128A)

The pretreatment plant will have a second area that meets the definition of a containment building. The pretreatment maintenance containment building comprises the majority of the east end of the building. Typical waste management activities performed in this containment building include equipment maintenance, including decontamination, size reduction, and packaging of spent equipment. This unit consists of the interim storage, lag storage, manipulator decontamination and repair, resin handling, waste packaging, tool cribs, and subchange~~filter overpack lidding~~ rooms. The unit will include hatches to import or export spent equipment. An overhead crane will facilitate movement of equipment and removal or placement of the spent equipment in the waste containers.

Pretreatment Maintenance Containment Building Design

The pretreatment maintenance containment building is designed as a completely enclosed area within the pretreatment plant. The unit is designed to prevent the release and exposure of dangerous constituents to the outside environment. The design and construction of the pretreatment plant exterior will prevent water from running into the plant. The roof of the pretreatment plant will consist of metal roofing, roof insulation, and a vapor barrier. Rainwater run-off will be collected by roof drains and drainage system with overflow roof drains. The approximate dimensions of the unit are summarized in Table 4-12.

Pretreatment Maintenance Containment Building Structure

The pretreatment maintenance containment building will consist of several rooms within the concrete-walled, fully enclosed pretreatment plant. Therefore, structural requirements for the containment building will be met by the design standards of the pretreatment plant. The design will ensure that the unit has sufficient structural strength to prevent collapse or failure. DWP Attachment 51, Supplement 1 provides documentation that the seismic requirements for the pretreatment plant meet or exceed the Uniform Building Code Seismic Design Requirements. ~~The seismic requirements of the pretreatment plant are presented in the RPP-WTP Compliance with Uniform Building Code Seismic Design Requirements, as identified in Supplement 1~~.

Pretreatment Maintenance Containment Building Materials

The pretreatment maintenance containment building will be constructed of steel-reinforced concrete. The interior floor and portions of the walls of the unit will be lined with stainless steel. The balance of the walls will have an impervious coating. ~~The roof of the pretreatment plant will consist of metal roofing, roof insulation, and a vapor barrier. Rainwater run-off will be collected by roof drains and drainage system with overflow roof drains~~.

Use of Incompatible Materials in the Pretreatment Maintenance Containment Building

A partial stainless steel liner will be provided for the unit. Stainless steel will be compatible with the equipment wastes that will be managed, which will include failed pumps, ultrafilters, and valves. Activities in the unit will be limited to decontamination, size reduction, and packaging the waste components into drums or waste boxes. Treatment reagents that could cause the liner to leak, corrode, or otherwise fail will not be used within the unit.

Primary Barrier Integrity in the Pretreatment Maintenance Containment Building

The pretreatment maintenance containment building is designed to withstand loads from the movement of personnel, wastes, and handling equipment. The seismic design criteria identified in DWP Attachment 51, Supplement 1 ensures that appropriate design loads, load combinations, and structural acceptance criteria are employed at the WTP.

Certification of Design for the Pretreatment Maintenance Containment Building

Prior to initial receipt of dangerous and mixed waste, certification by a qualified registered professional engineer that the pretreatment maintenance containment building meets the design requirements of 40 CFR 264.1101(a), (b), and (c) will be obtained.

Operation of the Pretreatment Maintenance Containment Building

Operational and maintenance controls and practices will be followed to ensure containment of the waste within the pretreatment maintenance containment building as required by 40 CFR 264.1101(c)(1).

Maintenance of the Pretreatment Maintenance Containment Building

The stainless steel lining of the unit will be constructed and maintained in a manner that will be free of significant cracks, gaps, corrosion, or other deterioration. The stainless steel liner will remain free of corrosion or other deterioration because it will be compatible with materials that will be managed in the containment building, which will include failed equipment. Only decontamination chemicals that are compatible with the liner will be used.

Measures to Prevent Tracking Wastes from the Pretreatment Maintenance Containment Building

The pretreatment maintenance containment building is designed to isolate failed equipment from the accessible environment and to prevent the spread of contaminated materials. A dust cleanup system will minimize the potential for dust to be tracked from the unit by humans or equipment. The containment building will be classified as a C3/C5 contamination area and, therefore, personnel access will be limited, and may be restricted~~ due to radiological concerns~~. Wastes leaving the unit may be enclosed within containers. If necessary, these containers will be decontaminated in the unit prior to transportation to a permitted storage area. Equipment leaving the unit will be decontaminated before being released for removal from the cell.

~~Control of Fugitive Dust from the Pretreatment Maintenance Containment Building~~

~~The following measures will be used to prevent fugitive dust from escaping the pretreatment maintenance containment building.~~

- ~~A cascading air flow from areas of least to greatest potential contamination (i.e., C2 to C3 to C5)~~
- ~~Greater negative air pressure in the unit compared with adjacent C2 units, to pull air into the unit and prevent backflow~~
- ~~Intake air through controlled air in-bleed units, with backflow prevention dampers, and air gaps around shield doors sized to prevent backflow~~
- ~~Dual HEPA filtration of exhaust air before discharge to the atmosphere through a monitored stack~~
- ~~A multiple fan extraction system designed to maintain negative pressure and cascading air flow, even during fan maintenance and repair~~
- ~~Personnel ingress and egress through airlocks and subchange rooms~~

Procedures in the Event of a Release or Potential Release from the Pretreatment Maintenance Containment Building

The design and operation of the unit makes it very unlikely that releases will occur. The design and operational measures that will be used will minimize the generation of dust and contain it within the unit. The ventilation system will also use negative air pressure to keep contamination from spreading to areas of lesser contamination~~ and will use two stage HEPA filtration to reduce the release of particles~~.

~~Inspections will identify conditions that could lead to a release. Such conditions will be corrected as soon as possible after they are identified. The ventilation system is designed with backup HEPA filters to provide redundant controls and to facilitate repairs or replacement.~~

In the unlikely event that a release of dangerous wastes from the containment building is detected, actions required by 40 CFR 264.1101(c)(3)(i) through (iii) will be taken. Specific administrative and operating methods that will be used to satisfy this requirement will be developed initial receipt of dangerous and mixed waste. These methods will be followed to repair condition that could lead to a release.

Inspections of the Pretreatment Maintenance Containment Building

An inspection program will be established as required under WAC 173-303-695 to detect conditions that could lead to the release of wastes from the pretreatment maintenance containment building. Such conditions will be corrected as soon as possible after they are identified. The inspection and monitoring schedule and methods that will be used to detect a release are included in DWP Attachment 51, Chapter 6.

4.2.4.3 Pretreatment ~~Air Filtration~~Filter Package Maintenance Containment Building (P-0223)

The pretreatment ~~air filtration~~filter package maintenance containment building is the third containment building within the pretreatment plant, located in the southeast portion of the plant. Typical waste management activities performed in this containment building include, waste storage, ~~size reduction,~~ decontamination, and equipment repair. A crane transports spent HEPA and HEME filters ~~to a size reduction station~~ and then places them inside a disposal container. The disposal container is then transported via cart, through an air lock and shield doors and to a load-out area for storage pending final disposal. The containment building also houses a hands-on crane decontamination and repair area.

Pretreatment ~~Air Filtration~~Filter Package Maintenance Containment Building Design

The pretreatment ~~fair filtration~~ilter package maintenance containment building will be completely enclosed within the pretreatment plant, and will be designed to prevent the release and exposure of dangerous constituents to the outside environment. The design and construction of the pretreatment plant exterior will prevent water from running into the plant. The roof of the pretreatment plant will consist of metal roofing, roof insulation, and a vapor barrier. Run-off will be collected by roof drains and a drainage system with overflow drains. The interior floor and a portion of the walls will be lined with a protective coating. The approximate dimensions of the containment building are summarized in Table 4-12.

Pretreatment ~~Air Filtration~~Filter Package Maintenance Containment Building Structure

Because the pretreatment ~~air filtration~~filter package maintenance containment building will be a concrete-walled structure fully enclosed within the pretreatment plant, its requirements will be met by the design standards of the pretreatment plant. The design will ensure that the unit has sufficient structural strength to prevent collapse or failure. DWP Attachment 51, Supplement 1 provides documentation that the seismic requirements for the pretreatment plant meet or exceed the Uniform Building Code Seismic Design Requirements. ~~The seismic requirements for the pretreatment plant are presented in the RPP-WTP Compliance with Uniform Building Code Seismic Design Requirements, contained in Supplement 1~~

Pretreatment ~~Air Filtration~~Filter Package Maintenance Containment Building Materials

The pretreatment filter package maintenance containment building will be constructed of steel-reinforced concrete. A protective coating will be provided for the containment building.

~~The interior floor and a portion of the walls will be lined with a protective coating. The roof of the pretreatment plant will consist of metal roofing, roof insulation, and a vapor barrier. Run-on will be collected by roof drains and a drainage system with overflow drains.~~

Use of Incompatible Materials for the Pretreatment ~~Air filtration~~Filter Package Maintenance Containment Building

~~A protective coating will be provided for the containment building~~. The protective coating will be compatible with the wastes that will be managed in the unit, which will include spent HEPA and HEME filters. Activities in the unit will be limited to ~~size reduction and~~ waste packaging. Treatment reagents that could cause the protective coating to leak, corrode, or otherwise fail will not be used within the unit.

Primary Barrier Integrity in the Pretreatment ~~Air filtration~~Filter Package Maintenance Containment Building

The pretreatment ~~air filtration~~filter package maintenance containment building will be designed to withstand loads from the movement of personnel, wastes, and handling equipment. The seismic design criteria found in DWP Attachment 51, Supplement 1 ensures that appropriate design loads, load combinations, and structural acceptance criteria are employed at the WTP.

Certification of Design for the Pretreatment ~~Air filtration~~Filter Package Maintenance Containment Building

Prior to ~~startup of operations,~~initial receipt of dangerous and mixed waste, certification by a qualified registered professional engineer that the pretreatment ~~air filtration~~filter package maintenance containment building meets the design requirements of 40 CFR 264.1101(a) and (c) will be obtained. The requirements of 40 CFR 264.1101(b) do not apply to this design because waste containing liquids will not be managed in the unit and waste will not be treated with liquids.

Operation of the Pretreatment ~~Air filtration~~Filter Package Maintenance Containment Building

Operational and maintenance controls and practices will be established to ensure containment of the waste within the pretreatment ~~air filtration~~filter package maintenance containment building, as required by 40 CFR 264.1101(c)(1).

Maintenance of the Pretreatment ~~Air filtration~~Filter Package Maintenance Containment Building

The protectively-coated concrete floor and walls of the unit will be constructed and maintained in a manner that will be free of significant cracks, gaps, corrosion, or other deterioration. The protective coating will be compatible with materials that will be managed in the containment building, which will include spent HEPA and HEME filters. No decontamination chemicals that are incompatible with the coated concrete will be used.

Measures to Prevent Tracking Wastes from the Pretreatment ~~Air filtration~~Filter Package Maintenance Containment Building

The pretreatment ~~air filtration~~filter package maintenance containment building is designed to manage spent HEPA and HEME filters. Conducting these activities in a C5 zone will prevent the spread of contaminated materials. Restricted personnel access and controlled movement of equipment into and out of the unit will decrease the possibility that waste will be tracked from the unit.

Personnel access to the pretreatment plant ~~air filtration~~filter package maintenance containment building, which is classified as a C5 contamination area, will be restricted~~due to radiological concerns~~. Access to the unit will be allowed only under limited circumstances, thereby limiting the potential for contacting the waste and tracking it from the unit.

~~Control of Fugitive Dust from the Pretreatment Air Filtration Containment Building~~

~~The following measures will be used to prevent fugitive dust from escaping the pretreatment air filtration containment building unit:~~

- ~~A cascading air flow from areas of least to greatest potential contamination (i.e., C2 to C3 to C5)~~
- ~~Greater negative air pressure in the unit, compared with adjacent C2 units, to pull air into the unit and prevent backflow~~
- ~~Intake air through controlled air in-bleed units, with backflow prevention dampers, and air gaps around shield doors sized to prevent backflow~~
- ~~Dual HEPA filtration of exhaust air before discharge to the atmosphere through a monitored stack~~
- ~~A multiple fan extraction system designed to maintain negative pressure, and cascading air flow, even during fan maintenance and repair~~
- ~~Personnel ingress and egress through airlocks and subchange rooms~~

Procedures in the Event of Release or Potential for Release from the Pretreatment ~~Air Filtration~~Filter Package Maintenance Containment Building

Conditions that could lead to a release from the pretreatment ~~air filtration~~filter package maintenance containment building will be corrected as soon as possible after they are identified. ~~The ventilation system and airlocks, the most likely sources of potential releases, will be designed with backup HEPA filters to facilitate repairs and replacement.~~ In the unlikely event of a release of dangerous wastes from the containment building, actions required by 40 CFR 264.1101(c)(3)(i) through (iii) will be taken. Specific administrative and operating methods that will be used to satisfy this requirement will be developed prior to initial receipt of dangerous and mixed waste.

Inspections of the Pretreatment ~~Air Filtration~~Filter Package Maintenance Containment Building

An inspection program will be established to detect conditions that could lead to a release of wastes from the pretreatment ~~air filtration~~filter package maintenance containment building. The inspection and monitoring schedule, and methods that will be used to detect releases from the unit, are included in DWP Attachment 51, Chapter 6.

4.2.4.4 Pretreatment Filter Cave Room Containment Building (P-0335)

The Pretreatment Filter Cave Room Containment Building is the fourth containment building within the pretreatment plant, in the southeast portion of the plant. Typical waste management activities performed in this containment building include waste storage, decontamination, and equipment repair. A crane transports the spent HEPA and HEME filters and places them inside a disposal container. The disposal container is then transported via cart through an air lock and shield doors and to a load-out area for storage pending final disposal. The containment building also houses a dedicated crane maintenance area.

Pretreatment Filter Cave Room Containment Building Design

The Pretreatment Filter Cave Room Containment Building will be completely enclosed within the pretreatment plant, and will be designed to prevent the release and exposure of dangerous constituents to the outside environment. The design and construction of the pretreatment plant exterior will prevent water from running into the plant. The roof of the pretreatment plant will consist of metal roofing, roof insulation, and a vapor barrier. Run-off will be collected by roof drains and a drainage system with overflow drains. The approximate dimensions of the containment building are summarized in Table 4-12.

Pretreatment Filter Cave Room Containment Building Structure

Because the Pretreatment Filter Cave Room Containment Building will be a concrete-walled structure fully enclosed within the pretreatment plant, its requirements will be met by the design standards of the pretreatment plant. The design will ensure that the unit has sufficient structural strength to prevent collapse or failure. DWP Attachment 51, Supplement 1 provides documentation that the seismic requirements for the pretreatment plant meet or exceed the Uniform Building Code Seismic Design Requirements.

Pretreatment Filter Cave Room Containment Building Unit Materials

The Pretreatment Filter Cave Room Containment Building will be constructed of steel-reinforced concrete. The interior floor and a portion of the walls will be lined with a protective coating.

Use of Incompatible Materials for the Pretreatment Filter Cave Room Containment Building

The protective coating will be compatible with the wastes that will be managed in the unit, which will include spent HEPA and HEME filters. Activities in the unit will be limited to ~~size reduction and~~ waste packaging. Treatment reagents that could cause the protective coating to leak, corrode, or otherwise fail will not be used within the unit.

Primary Barrier Integrity in the Pretreatment Filter Cave Room Containment Building

The Pretreatment Filter Cave Room Containment Building will be designed to withstand loads from the movement of personnel, wastes, and handling equipment. The seismic design criteria found in DWP Attachment 51, Supplement 1 ensures that appropriate design loads, load combinations, and structural acceptance criteria are employed at the WTP.

Certification of Design for the Pretreatment Filter Cave Room Containment Building
Prior to initial receipt of dangerous and mixed waste, certification by a qualified registered professional engineer that the Pretreatment Filter Cave Room Containment Building meets the design requirements of 40 CFR 264.1101(a) and (c) will be obtained. The requirements of 40 CFR 264.1101(b) do not apply to this design because waste containing liquids will not be managed in the unit and waste will not be treated with liquids.

Operations of the Pretreatment Filter Cave Room Containment Building
Operational and maintenance controls and practices will be established to ensure containment of the waste within the Pretreatment Filter Cave Room Containment Building, as required by 40 CFR 264.1101(c)(1).

Maintenance of the Pretreatment Filter Cave Room Containment Building
The protectively coated concrete floor and walls of the unit will be constructed and maintained in a manner that will be free of significant cracks, gaps, corrosion, or other deterioration. The protective coating will be compatible with materials that will be managed in the containment building, which will include spent HEPA and HEME filters. No decontamination chemicals that are incompatible with the coated concrete will be used.

Measures to Prevent Tracking Wastes from the Pretreatment Filter Cave Room Containment Building
The Pretreatment Filter Cave Room Containment Building is designed to manage spent HEPA and HEME filters. Conducting these activities in a C5 zone will prevent the spread of contaminated materials. Restricted personnel access and controlled movement of equipment into and out of the unit will decrease the possibility that waste will be tracked from the unit.

Personnel access to the Pretreatment Filter Cave Room Containment Building, which is classified as a C5 contamination area, will be restricted. Access to the unit will be allowed only under limited circumstances, thereby limiting the potential for contacting the waste and tracking it from the unit.

Procedures in the Event of Release or Potential for Release from the Pretreatment Filter Cave Room Containment Building
Conditions that could lead to a release from the Pretreatment Filter Cave Room Containment Building will be corrected as soon as possible after they are identified. In the unlikely event of a release of dangerous wastes from the containment building, actions required by 40 CFR 264.1101(c)(3)(i) through (iii) will be taken. Specific administrative and operating methods that will be used to satisfy this requirement will be developed prior to initial receipt of dangerous and mixed waste.

Inspections of the Pretreatment Filter Cave Room Containment Building
An inspection program will be established to detect conditions that could lead to a release of waste from the Pretreatment Filter Cave Room Containment Building. The inspection and monitoring schedule and methods that will be used to detect releases from the unit are included in DWP Attachment 51, Chapter 6.

4.2.4.5 LAW LSM Gallery Containment Building (L-0112)

There will be ~~three~~six containment buildings in the LAW vitrification plant. The first is the LAW locally shielded melter (LSM) gallery containment building, which will house the ~~three~~two LAW Melters. The LAW Melters are designed to include a roller or wheel assembly that will be used to move the melters in and out of the containment building. Spent LAW Melters will be disconnected from the offgas system, feed lines, electrical lines, and instrumentation. Open ports will be sealed. The sealed exterior of the melter will be decontaminated, if needed, prior to removal from the containment building.~~Out of service melters will be transported out of the unit to melter storage area 1 or 2~~

LAW LSM Gallery Containment Building Design

The LAW LSM gallery containment building will be completely enclosed within the LAW vitrification plant. The unit will be designed to prevent the release and exposure of dangerous constituents to the outside environment. The design and construction of the LAW vitrification plant exterior will prevent water from running into the plant. The roof of the LAW vitrification plant will consist of metal roofing, roof insulation, and a vapor barrier. Rainwater run-off will be collected by roof drains and a drainage system with overflow drains. The approximate dimensions of the unit are summarized in Table 4-12.

The melter feed slurry will be introduced to the LAW melters through ~~single~~double-walled stainless steel feed lines. The feed lines will also be provided with bulges that will function as secondary containment. A low point within the bulge will be incorporated into the design to allow drainage to a sump located in the adjacent process room.

The only other sources of liquids that will be present in the cave are the waterline to the two film cooler pipe washout spray rings, and the melter water jacket and connecting piping. These clean water lines will be instrumented to detect leaks automatically. A rupture of either water line or a waste feed line would be an abnormal event and the liquid would be contained within the outer melter shield box and corrective measures would be initiated. Corrective action would start with closure of the supply line and draining of remaining water outside the melter shield box, and could require feed cutoff and melter idling or shut down. The amount of water that could be released into the containment building would be unlikely to exceed a few gallons, which would rapidly evaporate into the ambient air due to the high temperature in the cave under normal operating conditions.

LAW LSM Gallery Containment Building Structure

The LAW LSM gallery containment building will be~~a concrete walled structure~~ fully enclosed within the LAW vitrification plant. Therefore, structural requirements for the containment building will be met by the design standards of the LAW vitrification plant. The design will ensure that the unit has sufficient structural strength to prevent collapse or failure. ~~The seismic requirements for the LAW vitrification plant are presented in the RPP-WTP Compliance with Uniform Building Code Seismic Design Requirements, found in Supplement 1. Within the containment building will be partitions between the LSMs~~. Within the containment building will be partitions between the LSMs. DWP Attachment 51, Supplement 1 provides documentation that the seismic requirements for the LAW vitrification plant meet or exceed the Uniform Building Code Seismic Design Requirements.

LAW LSM Gallery Containment Building Materials

The LAW LSM gallery containment building will be constructed of steel-reinforced concrete. The interior floor and the walls of the unit will be covered with a protective coating~~. The roof of the LAW vitrification plant will consist of metal roofing, roof insulation, and a vapor barrier. Rainwater run-on will be collected by roof drains and a drainage system with overflow drains.~~

Use of Incompatible Materials for the LAW LSM Gallery Containment Building

A protective coating will be applied to the concrete floor and a portion of the walls of the unit. The coating will be compatible with the wastes that will be managed in the containment building. The wastes to be managed will include LAW LSM melters and consumables, which may be metallic parts and failed equipment. Very little or no glass waste is expected to be present on the exterior of the LSM, due to the design of the melter. Reagents that could cause the liner to leak, corrode, or otherwise fail will not be used within the unit.

Primary Barrier Integrity in the LAW LSM Gallery Containment Building

The LAW LSM gallery containment building will be designed to withstand loads from the movement of personnel, wastes, and handling equipment. The seismic design criteria found in DWP Attachment 51, Supplement 1 ensures that appropriate design loads, load combinations, and structural acceptance criteria are employed at the WTP.

Certification of Design for the LAW LSM Gallery Containment Building

Prior to initial receipt of dangerous and mixed waste, certification by a qualified registered professional engineer that the LAW LSM gallery containment building meets the design requirements of 40 CFR 264.1101(a), (b), and (c) will be obtained.

Operation of the LAW LSM Gallery Containment Building

Operational and maintenance controls and practices will be established and followed to ensure containment of the waste within the LAW LSM gallery containment building, as required by 40 CFR 264.1101(c)(1). Activities in the building will be remotely conducted.

Maintenance of the LAW LSM Gallery Containment Building

The protectively-coated concrete floor of the containment building will be constructed and maintained in a manner that will be free of significant cracks, gaps, corrosion, or other deterioration The concrete and protective coating will be free of corrosion or other deterioration because it will be compatible with materials that will be managed in the containment building, including the glass waste and containerized or uncontainerized waste and equipment.

Measures to Prevent Tracking Wastes from the LAW LSM Gallery Containment Building

The unit is designed to manage LAW melters. The melters will be disconnected from systems when determined to be waste. The ports where the melter was attached to systems will be sealed and glass waste will be contained within the melter. This design will prevent waste from entering the containment building and thus from being tracked from the unit.

The unit will be classified as a C3 contamination area, which allows only limited personnel access. ~~Personnel access will be limited due to radiological concerns~~Access will be required only for nonroutine events such as when melters are determined to be waste, once every 4 to 5 years, or when equipment must be dismantled.~~The unit wil be classified as a C3 contamination area, which allow only limited personnel access~~ Dry decontamination methods using cloth will be used.

~~Control of Fugitive Dust From the LAW LSM Gallery Containment Building~~
~~Operational controls and the LAW vitrification plant ventilation system will be used to control fugitive dust emissions from the unit to meet the requirements of 40 CFR 264.11101(c)(1)(iv). The following measures will be used to prevent dust from escaping the LAW LSM gallery containment building:~~

- ~~A cascading air flow from areas of least to greatest potential contamination (i.e., C2 to C3 to C5)~~
- ~~Greater negative air pressure in the unit compared to adjacent C2 units, to pull air into the unit and prevent backflow~~
- ~~Intake air through controlled air in-bleed units, with backflow prevention dampers, and air gaps around shield doors sized to prevent backflow~~
- ~~Dual HEPA filtration of exhaust air before discharge to the atmosphere through a monitored stack~~
- ~~A multiple fan extraction system, designed to maintain negative pressure and cascading air flow, even during fan maintenance and repair~~
- ~~Personnel ingress and egress through airlocks and subchange rooms~~

Procedures in the Event of Release or Potential for Release from the LAW LSM Gallery Containment Building
Conditions that could lead to a release from the LAW LSM gallery containment building will be corrected as soon as possible after they are identified. ~~The ventilation system and airlocks, the most likely sources of potential releases, are designed with two stages of HEPA filters, with backup HEPA filters to facilitate repairs and replacement.~~

In the unlikely event of a release of dangerous wastes from the containment building, actions required by 40 CFR 264.1101(c)(3)(i) through (iii) will be taken. Specific administrative and operating methods that will be used to satisfy this requirement will be developed prior to initial receipt of dangerous and mixed waste. The methods will be followed to repair conditions that could lead to a release.

Inspections of the LAW LSM Gallery Containment Building
An inspection program will be established to detect conditions that could lead to release of wastes from the LAW LSM gallery containment building. The inspection and monitoring schedule and methods that will be used to detect releases from the unit are included in DWP Attachment 51, Chapter 6.

4.2.4.6 ILAW Container Finishing Line Containment Building <u>(L-0109B, L-0109C, L-0109D, L-0109E, L-0115B, L-0115C, L-015D, L-0115E)</u>

The ILAW <u>container finishing line</u> containment building will be located in the LAW vitrification plant. It will be used for managing ILAW containers that have cooled sufficiently to be closed and prepared for finishing. Typical waste management activities performed in this containment building include storage of uncontainerized waste and decontamination. An ILAW container is transported from an inert filling~~ room to a~~ <u>and</u> lidding room, to a decontamination room, and finally to a swab and monitor room, ~~to a fixative application room as necesary~~and then out of the containment building. This sequence of rooms is considered a finishing line. There are two finishing lines within the ILAW container finishing line containment building.

<u>ILAW Container Finishing Containment Building Design</u>
The ILAW container finishing containment building will be completely enclosed within the LAW vitrification plant. It will be designed to prevent the release and exposure of dangerous constituents to the outside environment. The design and construction of the LAW vitrification plant exterior will prevent water from running into the plant. <u>The roof of the LAW vitrification plant will consist of metal roofing, roof insulation, and a vapor barrier. Roof drains and drainage system with overflow drains will collect run-off.</u> The approximate dimensions of the unit are summarized in Table 4-12.

<u>ILAW Container Finishing Containment Building Structure</u>
Because the ILAW container finishing containment building will be a concrete-walled structure fully enclosed within the LAW vitrification plant, its structural requirements will be met by the design standards of the LAW vitrification plant. The design will ensure that the unit has sufficient structural strength to prevent collapse or failure. <u>DWP Attachment 51</u>, Supplement 1 <u>provides documentation that the seismic requirements for the LAW vitrification plant meet or exceed the Uniform Building Code Seismic Design Requirements</u>. ~~The seismic requirements for the LAW vitrification plant are presented in the RPP-WTP Compliance with Uniform Building Code Seismic Design Requirements, found in Supplement 1~~.

<u>ILAW Container Finishing Containment Building Materials</u>
The ILAW container finishing containment building will be constructed of steel-reinforced concrete. ~~The primary barrier of the inert filling rooms, lid sealing rooms, and swab and monitor rooms is the concrete structure of the unit.~~ The interior floor and a portion of the walls of the decontamination rooms will be lined with a protective coating.

~~The roof of the LAW vitrification plant will consist of metal roofing, roof insulation, and a vapor barrier. Roof drains and drainage system with overflow drains will collect run-on.~~

<u>Use of Incompatible Materials for the ILAW Container Finishing Containment Building</u>
The primary barrier will have a protective coating. This coating will be compatible with the waste managed in the unit. The waste to be managed includes vitrified waste glass within the stainless steel containers. This coating will be present in the two inert fill rooms, the fixative application room, and the two swab and monitor rooms.

A protective coating will be present in the decontamination rooms. The coating will be compatible with the wastes that will be managed, which will include filled ILAW containers. No glass waste is expected to be present on the exterior of the containers, due to the design of the melter pour stations. The interior is the only portion of the container that will be exposed to the glass waste. Additionally, the removal of glass will occur in the inert fill and lidding rooms. Carbon dioxide pellets, also compatible with the stainless steel, will be used to remove contamination from the container surface. Reagents that could cause the liner to leak, corrode, or otherwise fail will not be used within the unit.

Primary Barrier Integrity in the ILAW Container Finishing Containment Building

The ILAW containment building will be designed to withstand loads from the movement of personnel, wastes, and handling equipment. The seismic design criteria found in DWP Attachment 51, Supplement 1 ensures that appropriate design loads, load combinations, and structural acceptance criteria are employed at the WTP.

Certification of Design for the ILAW Container Finishing Containment Building

Prior to initial receipt of dangerous and mixed waste, certification by a qualified registered professional engineer that the ILAW containment building meets the design requirements of 40 CFR 264.1101(a) and (c) will be obtained. The requirements of 40 CFR 264.1101(b) do not apply to this design because the waste managed in the unit will not contain free liquids and free liquids will not be used to treat the waste.

Operation of the ILAW Container Finishing Containment Building

Operational and maintenance controls and practices will be established to ensure containment of the waste within the ILAW containment building, as required by 40 CFR 264.1101(c)(1). Activities in the building will be remotely conducted.

Maintenance of the ILAW Container Finishing Containment Building

The protectively-coated concrete floor and walls of the of the containment building will be constructed and maintained in a manner that will be free of significant cracks, gaps, corrosion, or other deterioration. The coated concrete will be free of corrosion or other deterioration because it will be compatible with materials that will be managed in the containment building, which will include glass waste and containerized waste and equipment. The protective coating in the decontamination rooms will be constructed and maintained in a manner that will be free of significant cracks, gaps, corrosion, or other deterioration. The coating will remain free of corrosion or other deterioration because it will be compatible with materials that will be managed in the containment building, which will include failed equipment. Wastes managed in the containment building will not be stacked.

Measures to Prevent Tracking Wastes from the ILAW Container Finishing Containment Building

The ILAW containment building is designed to sample, seal, and decontaminate the filled ILAW containers. Conducting these activities in a C3 zone prevents the spread of contaminated materials from the unit as air flow is managed in the LAW vitrification plant ventilation system. The containment building is under negative pressure~~so no airflow through doors or other~~

~~openings occurs~~. Air flow through this containment building goes to a C5 air system, which passes through HEPA filters before exiting the plant stack.

A vacuum cleanup system, located in the two inert fill rooms, is expected to be infrequently used to collect dust from the inert filling activities, and thereby minimize the potential for dust to be tracked from the unit. The dust will be disposed of as secondary waste. Additionally, personnel access to the containment building, which is classified as a C3 contamination area, will be~~limited due to radiological concerns. Access to the unit will be~~ allowed only under limited circumstances, reducing the potential for contacting the waste and tracking it from the unit.

~~Control of Fugitive Dust from the ILAW Container-Finishing Containment Building~~
~~The following measures will be used to prevent fugitive dust from escaping the containment building:~~

- ~~A HEPA-filtered vacuum system will be dedicated to each decontamination room to collect debris~~
- ~~A cascading air flow from areas of least to greatest potential contamination (i.e., C2 to C3 to C5)~~
- ~~Greater negative air pressure in the unit, compared to adjacent C2 units, to pull air into the unit and prevent backflow~~
- ~~Intake air through controlled air in-bleed units, with backflow prevention dampers, and air gaps around shield doors sized to prevent backflow~~
- ~~Safety interlocks to shut down C3 extraction fans to prevent backflow if the C5 system shuts down~~
- ~~Dual HEPA filtration of exhaust air before discharge to the atmosphere through a monitored stack~~
- ~~A multiple fan extraction system, designed to maintain negative pressure and cascading air flow, even during fan maintenance and repair~~
- ~~Personnel ingress and egress through airlocks and subchange rooms~~

Procedures in the Event of Release or Potential for Release from the ILAW Container Finishing Containment Building
Conditions that could lead to a release from the ILAW containment building will be corrected as soon as possible after they are identified. ~~The ventilation system and airlocks, the most likely sources of potential releases, will incorporate two stages of HEPA filters, with backup HEPA filters to facilitate repairs and replacement.~~ In the unlikely event of a release of dangerous wastes from the containment building, actions required by 40 CFR 264.1101(c)(3)(i) through (iii) will be taken. Specific administrative and operating methods to satisfy this requirement will be developed prior to initial receipt of dangerous and mixed waste. The methods will be followed to repair conditions that could lead to a release.

Inspections of the ILAW Container Finishing Containment Building
An inspection program will be established to detect conditions that could lead to a release of wastes from the ILAW container finishing containment building. The inspection and monitoring

schedule and methods that will be used to detect releases from the unit are included in DWP Attachment 51, Chapter 6.

4.2.4.7 LAW Vitrification Plant ~~C3 Workshop~~Consumable Import/Export Containment Building (L-0119B)

The LAW vitrification plant ~~C3 workshop~~consumable import/export containment building will be located in the ~~northwestern portion~~west end of the LAW vitrification plant on the 3 ft elevation. Typical waste management activities performed in this containment building include decontamination, size reduction, and packaging of spent equipment. Simple decontamination of components will be performed to allow contact handling. Waste streams generated within the workshop will be volume reduced as necessary by means of disassembly or other suitable means to fit standard packaging such as drums and/or small boxes.

LAW Vitrification Plant ~~C3 Workshop~~Consumable Import/Export Containment Building Design

The LAW vitrification plant ~~C3 workshop~~consumable import/export containment building will be designed as a completely enclosed area within the LAW vitrification plant. It is designed to prevent the release of dangerous constituents and their exposure to the outside environment. The design and construction of the LAW vitrification plant exterior will prevent water from running into the plant. The roof of the LAW vitrification plant will consist of metal roofing, roof insulation, and vapor barrier. Rainwater run-off will be collected by roof drains and drainage systems with overflow roof drains. The approximate dimensions of the unit are summarized in Table 4-12.

LAW Vitrification Plant ~~C3 Workshop~~Consumable Import/Export Containment Building Structure

The LAW vitrification plant ~~C3 workshop~~consumable import/export containment building will be a concrete-walled structure fully enclosed within the LAW vitrification plant. Therefore, structural requirements for the containment building will be met by the design standards of the LAW vitrification plant. The design will ensure that the unit has sufficient structural strength to prevent collapse or failure. DWP Attachment 51, Supplement 1 provides documentation that the seismic requirements for the LAW vitrification plant meet or exceed the Uniform Building Code Seismic Design Requirements. ~~The seismic requirements for the LAW vitrification plant are presented in the RPP-WTP Compliance with Uniform Building Code Seismic Design Requirements, as found in Supplement 1.~~

LAW Vitrification Plant ~~C3 Workshop~~Consumable Import/Export Containment Building Materials

The LAW vitrification plant ~~C3 workshop~~consumable import/export containment building will be constructed of steel-reinforced concrete. The interior floor and a portion of the walls of the unit will be lined with a protective coating. ~~The roof of the LAW vitrification plant will consist of metal roofing, roof insulation, and vapor barrier. Rainwater run-off will be collected by roof drains and drainage systems with overflow roof drains.~~

Use of Incompatible Materials in the LAW Vitrification Plant ~~C3 Workshop~~Consumable Import/Export Containment Building

A protective coating will be provided for the floor of this unit. The protective coating will be compatible with the wastes that will be managed. Activities in the unit will be limited to decontamination, size reduction, and packaging the waste components into drums or waste boxes. Treatment reagents that could cause the liner or coating to leak, corrode, or otherwise fail will not be used within the unit.

Primary Barrier Integrity in the LAW Vitrification Plant ~~C3 Workshop~~Consumable Import/Export Containment Building

The LAW vitrification plant ~~C3 workshop~~consumable import/export containment building will be designed to withstand loads from the movement of personnel, wastes, and handling equipment. The seismic design criteria found in DWP Attachment 51, Supplement 1 ensures that appropriate design loads, load combinations, and structural acceptance criteria are employed at the WTP.

Certification of Design for the LAW Vitrification Plant ~~C3 Workshop~~Consumable Import/Export Containment Building

Prior to receipt of dangerous and mixed waste, a certification by a qualified registered professional engineer that the LAW vitrification plant ~~C3 workshop~~consumable import/export containment building meets the design requirements of 40 CFR 264.1101(a), (b), and (c) will be obtained.

Operation of the LAW Vitrification Plant ~~C3 Workshop~~Consumable Import/Export Containment Building

Operational and maintenance controls and practices will be established and followed to ensure containment of the wastes within the LAW vitrification plant C3 containment building unit as required by 40 CFR 264.1101(c)(1).

Maintenance of the LAW Vitrification Plant ~~C3 Workshop~~Consumable Import/Export Containment Building

The protective coating of the unit will be constructed and maintained in a manner that will be free of significant cracks, gaps, corrosion, or other deterioration. The protective coating will remain free of corrosion or other deterioration because it is compatible with materials that will be managed in the containment building. The failed equipment that will be managed in the containment building unit will be compatible with the protective coating. Only decontamination chemicals that are compatible with the coating will be used.

Measures to Prevent Tracking Wastes from the LAW Vitrification Plant ~~C3 Workshop~~ Consumable Import/Export Containment Building

The LAW vitrification plant ~~C3 workshop~~consumable import/export containment building will be designed to isolate failed equipment from the accessible environment and to prevent the spread of contaminated materials. Very little dust is expected to be generated in the unit.

~~Personnel access to~~The containment building will be ~~limited to radiological concerns It will be~~ classified as a C3 contamination area, which allows only limited access by personnel. Wastes leaving the unit will be enclosed within containers. If necessary, these containers will be decontaminated in the unit ~~and subjected to radiological survey~~ prior to release and transportation to a permitted storage area. Equipment leaving the unit will be decontaminated, when necessary, before being released for removal from the cells.

~~Control of Fugitive Dust from the LAW Vitrification Plant C3 Workshop Containment Building~~
~~The following measures will be used to prevent fugitive dust from escaping the LAW vitrification plant C3 workshop containment building:~~

- ~~A cascading air flow from areas of least to greatest potential contamination (that is, C2 to C3 to C5)~~
- ~~Intake air through controlled air in-bleed units, with backflow prevention dampers, and air gaps around shield doors sized to prevent backflow~~
- ~~HEPA filtration of exhaust air before discharge to the atmosphere through a monitored stack~~
- ~~A multiple fan extraction system designed to maintain negative pressure and cascading air flow, even during fan maintenance and repair~~

Procedures in the Event of Release or Potential for Release from the LAW Vitrification Plant~~C3 Workshop~~ Consumable Import/Export Containment Building
The design and operation of the unit makes it very unlikely that releases will occur. The design and operational measures will minimize the generation of dust and contain it within the unit. The ventilation system will also use negative air pressure to keep contamination from spreading to areas of lesser contamination. ~~and will use two-stage HEPA filtration to reduce the release of particles. The ventilation system is designed with backup HEPA filters to provide redundant controls and to facilitate repairs or replacement.~~

Inspections will identify conditions that could lead to a release. Such conditions will be corrected as soon as possible after they are identified. In the unlikely event that a release of dangerous wastes from the containment building is detected, actions required by 40 CFR 264.1101(c)(3)(i) through (iii) will be taken. Specific administrative and operating methods that will be used to satisfy this requirement will be developed prior to initial receipt of dangerous and mixed waste. These methods will be followed to repair conditions that could lead to a release.

Inspections of the LAW Vitrification Plant Consumable Import/Export Containment Building
An inspection program will be established to detect conditions that could lead to a release of wastes from the LAW vitrification plant consumable import/export containment building. The inspection and monitoring schedule and methods that will be used to detect releases from the unit are included in DWP Attachment 51, Chapter 6.

4.2.4.8 C3 Workshop Containment Building (L-226A)

The C3 workshop containment building will be located in the west side of the LAW vitrification plant at elevation 28 ft.

Typical waste management activities performed in this containment building include decontamination, size reduction, and packaging of spent equipment. Equipment will be transported to the unit contained in shielded casks, drums, or in a standard waste box. In the workshop, the equipment will be decontaminated to enable hands-on maintenance. Spent equipment parts will be bagged and placed in standard waste containers or boxes for disposal. Size reduction may be performed to facilitate packaging. Other spent equipment will be packaged in drums or standard waste boxes.

C3 Workshop Containment Building Design
The C3 workshop containment building will be a completely enclosed area within the LAW vitrification plant. It will be designed to prevent the release of dangerous waste and their exposure to the outside environment. The design and construction of the LAW vitrification plant exterior will prevent water from running into the plant. The roof of the LAW vitrification plant will consist of metal roofing, roof insulation, and vapor barrier. Rainwater run-off will be collected by roof drains and drainage systems with overflow roof drains. The approximate dimensions of the unit are summarized in Table 4-12.

C3 Workshop Containment Building Structure
The C3 workshop containment building will be fully enclosed within the LAW vitrification plant. Therefore, structural requirements for the containment building will be met by the design standards of the LAW vitrification plant. The design will ensure that the unit has sufficient structural strength to prevent collapse or failure. DWP Attachment 51, Supplement 1 provides documentation that the seismic requirements for the LAW vitrification plant meet or exceed the Uniform Building Code Seismic Design Requirements.

C3 Workshop Containment Building Materials
The C3 workshop containment building will be constructed of a steel-reinforced concrete floor and plasterboard partition walls.

Use of Incompatible Materials in the C3 Workshop Containment Building
Activities in the unit will be limited to decontamination, size reduction, and packaging the waste components into drums or waste boxes. Treatment reagents that could cause the liner or coating to leak, corrode, or otherwise fail will not be used within the unit.

Primary Barrier Integrity in the C3 Workshop Containment Building
The C3 workshop containment building is designed to withstand loads from the movement of personnel, wastes, and handling equipment. The seismic design criteria found in DWP Attachment 51, Supplement 1 ensures that appropriate design loads, load combinations, and structural acceptance criteria are employed at the WTP.

Certification of Design for the C3 Workshop Containment Building

Prior to initial receipt of dangerous and mixed waste, a certification by a qualified registered professional engineer that the C3 workshop containment building meets the design requirements of 40 CFR 264.1101(a) and (c) will be obtained. The requirements of 40 CFR 264.1101(b) do not apply to this design because the waste managed in the unit will not contain free liquids or be treated with free liquids.

Operation of the C3 Workshop Containment Building

Operational and maintenance controls and practices will be established and followed to ensure containment of the wastes within the C3 workshop containment building unit as required by 40 CFR 264.1101(c)(1).

Maintenance of the C3 Workshop Containment Building

The concrete will be constructed and maintained in a manner that will be free of significant cracks, gaps, corrosion, or other deterioration. The concrete will remain free of corrosion or other deterioration because it is compatible with materials that will be managed in the containment building. The failed equipment that will be managed in the containment building unit will be compatible with the concrete. Only decontamination chemicals that are compatible with the concrete will be used.

Measures to Prevent Tracking Wastes from the C3 Workshop Containment Building

The C3 workshop containment building will be designed to isolate failed equipment from the accessible environment and to prevent the spread of contaminated materials. Very little dust is expected to be generated in the unit.

The containment building classified as a C3 contamination area, which allows only limited access by personnel. Personnel access will be via a C2/C3 subchange room. Equipment will enter and exit the workshop via a C2/C3 airlock. Wastes leaving the unit will be enclosed within containers. If necessary, the containers will be decontaminated in the unit prior to transportation to a permitted storage area. Equipment leaving the unit will be decontaminated, when necessary, before being released for removal from the cells.

Procedures in the Event of Release or Potential for Release from the C3 Workshop Containment Building

The design and operation of the unit makes it very unlikely that releases will occur. The design and operational measures will minimize the generation of dust and contain it within the unit. The ventilation system will also use negative air pressure to keep contamination from areas of lesser contamination. Offgas will be routed to the LAW offgas treatment system.

Inspections will identify conditions that could lead to a release. Such conditions will be corrected as soon as possible after they are identified. In the unlikely event that a release of dangerous wastes from the containment building is detected, actions required by 40 CFR 264.1101(c)(3)(i) through (iii) will be taken. Specific administrative and operating methods that will be used to satisfy this requirement will be developed prior to initial receipt of dangerous and mixed waste. These methods will be followed to repair conditions that could lead to a release.

Inspections of the C3 Workshop Containment Building

An inspection program will be established to detect conditions that could lead to a release of wastes from the C3 workshop containment building. The inspection and monitoring schedule and methods that will be used to detect releases from the unit are included in DWP Attachment 51 Chapter 6.

4.2.4.9 LAW Pour Cave Containment Building (L-B009B, L-B011B, L-B011C, L-B013B, L-B013C, L-B015A)

The LAW pour cave containment building (rooms L-B009B, L-B011B, L-B011C, L-B013B, L-B013C, L-B015A) will be located in the LAW vitrification plant, elevation -21 ft. It will be used for managing ILAW containers as they are filled with glass from the LAW Melters (LAW-MLTR-00001/2). The filled ILAW containers will be allowed to cool with the lids off the container. Cooled ILAW containers will be transferred to the ILAW container finishing line containment building for lidding and preparation for export to a storage facility.

LAW Pour Cave Containment Building Design

The LAW pour cave containment building will be completely enclosed within the LAW vitrification plant, which will be designed to prevent the release and exposure of dangerous constituents to the outside environment. The design and construction of the LAW vitrification plant exterior will prevent precipitation from entering into the plant. The roof of the LAW vitrification plant will consist of metal roofing, roof insulation, and a vapor barrier. Roof drains and drainage system with overflow drains will collect run-off. The approximate dimensions of the unit are summarized in Table 4-12.

LAW Pour Cave Containment Building Structure

Because the LAW pour cave containment building will be a concrete-walled structure fully enclosed within the LAW vitrification plant, its structural requirements will be met by the design standards of the LAW vitrification plant. The design will ensure that the unit has sufficient structural strength to prevent collapse or failure. DWP Attachment 51, Supplement 1 provides documentation that the seismic requirements for the LAW vitrification plant meet or exceed the Uniform Building Code Seismic Design Requirements.

LAW Pour Cave Containment Building Materials

The LAW pour cave containment building will be constructed of steel-reinforced concrete.

Use of Incompatible Materials for the LAW Pour Cave Containment Building

The waste to be managed includes vitrified waste glass within the stainless steel containers. No glass waste is expected to be present on the exterior of the containers, due to the design of the melter pour stations. The interior is the only portion of the container that will be exposed to the glass waste. Reagents that could cause corrosion or other failure will not be used within the unit.

Primary Barrier Integrity in the LAW Pour Cave Containment Building

The LAW pour cave containment building will be designed to withstand loads from the movement of personnel, wastes, and handling equipment. The seismic design criteria found in *RPP-WTP Compliance with Uniform Building Code Seismic Design Requirements*, DWP Attachment 51, Supplement 1 ensures that appropriate design loads, load combinations, and structural acceptance criteria are employed at the WTP.

Certification of Design for the LAW Pour Cave Containment Building

Prior to initial receipt of dangerous and mixed waste, certification by a qualified registered professional engineer that the LAW pour cave containment building meets the design requirements of 40 CFR 264.1101(a) and (c) will be obtained. The requirements of 40 CFR 264.1101(b) do not apply to this design because the waste managed in the unit will not contain free liquids and free liquids will not be used to treat the waste.

Operation of the LAW Pour Cave Containment Building

Operational and maintenance controls and practices will be established to ensure containment of the waste within the LAW pour cave containment building, as required by 40 CFR 264.1101(c)(1). Activities in the building will be remotely conducted during normal operation when ILAW containers are present.

Maintenance of the LAW Pour Cave Containment Building

The concrete will be free of corrosion or other deterioration because it will be compatible with materials that will be managed in the containment building, which will include containerized glass waste and equipment. Wastes managed in the containment building will not be stacked.

Measures to Prevent Tracking Wastes from the LAW Pour Cave Containment Building

The LAW pour cave containment building is designed to manage the filling and movement of ILAW containers. Conducting these activities in a C5 zone prevents the spread of contaminated materials from the unit as airflow is managed in the LAW vitrification plant ventilation system. The containment building is under negative pressure. Airflow through this containment building goes to a C5 air system, which passes through HEPA filters before exiting the plant stack. Personnel access will be restricted during normal operation since it is classified as a C5 contamination area. The containment building may be reclassified as a C3 area for equipment maintenance.

Procedures in the Event of Release or Potential for Release from the LAW Pour Cave Containment Building

Conditions that could lead to a release from the LAW pour cave containment building will be corrected as soon as possible after they are identified. In the unlikely event of a release of dangerous wastes from the containment building, actions required by 40 CFR 264.1101(c)(3)(i) through (iii) will be taken. Specific administrative and operating methods to satisfy this requirement will be developed prior to initial receipt of dangerous and mixed waste. The methods will be developed to repair conditions that could lead to a release.

Inspections of the LAW Pour Cave Containment Building
An inspection program will be established to detect conditions that could lead to a release of wastes from the LAW pour cave containment building. The inspection and monitoring schedule and methods that will be used to detect releases from the unit are included in DWP Attachment 51, Chapter 6.

4.2.4.10 LAW Container Buffer Storage Containment Building (L-B025C, L-B025D)

The LAW container buffer storage containment building (rooms L-B025C, L-B0025D) will be located in the LAW vitrification plant, elevation -21 ft. It will be used for managing ILAW containers as after they are filled with glass from the LAW Melters (LAW-MLTR-00001/2). The filled ILAW containers will be allowed to cool with the lids off the container. Cooled ILAW containers will be transferred to the ILAW container finishing line containment building for lidding and preparation for export to a storage facility.

LAW Container Buffer Storage Containment Building Design
The LAW container buffer storage containment building will be completely enclosed within the LAW vitrification plant, which will be designed to prevent the release and exposure of dangerous constituents to the outside environment. The design and construction of the LAW vitrification plant exterior will prevent precipitation from entering into the plant. The roof of the LAW vitrification plant will consist of metal roofing, roof insulation, and a vapor barrier. Roof drains and drainage system with overflow drains will collect run-off. The approximate dimensions of the unit are summarized in Table 4-12.

LAW Container Buffer Storage Containment Building Structure
Because the LAW container buffer storage containment building will be a concrete-walled structure fully enclosed within the LAW vitrification plant, its structural requirements will be met by the design standards of the LAW vitrification plant. The design will ensure that the unit has sufficient structural strength to prevent collapse or failure. DWP Attachment 51, Supplement 1 provides documentation that the seismic requirements for the LAW vitrification plant meet or exceed the Uniform Building Code Seismic Design Requirements.

LAW Container Buffer Storage Containment Building Materials
The LAW container buffer storage containment building will be constructed of steel-reinforced concrete.

Use of Incompatible Materials for the LAW Container Buffer Storage Containment Building
The waste to be managed includes vitrified waste glass within the stainless steel containers. No glass waste is expected to be present on the exterior of the containers. The interior is the only portion of the container that will be exposed to the glass waste. Reagents that could cause corrosion or other failure will not be used within the unit.

Primary Barrier Integrity in the LAW Container Buffer Storage Containment Building
The LAW container buffer storage containment building will be designed to withstand loads from the movement of personnel, wastes, and handling equipment. The seismic design criteria

found in *RPP-WTP Compliance with Uniform Building Code Seismic Design Requirements*, DWP Attachment 51, Supplement 1 ensures that appropriate design loads, load combinations, and structural acceptance criteria are employed at the WTP.

Certification of Design for the LAW Container Buffer Storage Containment Building

Prior to initial receipt of dangerous and mixed waste, certification by a qualified registered professional engineer that the LAW container buffer storage containment building meets the design requirements of 40 CFR 264.1101(a) and (c) will be obtained. The requirements of 40 CFR 264.1101(b) do not apply to this design because the waste managed in the unit will not contain free liquids and free liquids will not be used to treat the waste.

Operation of the LAW Container Buffer Storage Containment Building

Operational and maintenance controls and practices will be established to ensure containment of the waste within the LAW container buffer storage containment building, as required by 40 CFR 264.1101(c)(1). Activities in the building will be remotely conducted during normal operation when ILAW containers are present.

Maintenance of the LAW Container Buffer Storage Containment Building

The concrete will be free of corrosion or other deterioration because it will be compatible with materials that will be managed in the containment building, which will include containerized glass waste and equipment. Wastes managed in the containment building will not be stacked.

Measures to Prevent Tracking Wastes from the LAW Container Buffer Storage Containment Building

The LAW container buffer storage containment building is designed to manage the movement and storage of ILAW containers. Conducting these activities in a C5 zone prevents the spread of contaminated materials from the unit as airflow is managed in the LAW vitrification plant ventilation system. The containment building is under negative pressure. Airflow through this containment building goes to a C5 air system, which passes through HEPA filters before exiting the plant stack. Personnel access will be restricted during normal operation since it is classified as a C5 contamination area. The containment building may be reclassified as a C3 area for equipment maintenance.

Procedures in the Event of Release or Potential for Release from the LAW Container Buffer Storage Containment Building

Conditions that could lead to a release from the LAW container buffer storage containment building will be corrected as soon as possible after they are identified. In the unlikely event of a release of dangerous wastes from the containment building, actions required by 40 CFR 264.1101(c)(3)(i) through (iii) will be taken. Specific administrative and operating methods to satisfy this requirement will be developed prior to initial receipt of dangerous and mixed waste. The methods will be developed to repair conditions that could lead to a release.

Inspections of the LAW Container Buffer Storage Containment Building

An inspection program will be established to detect conditions that could lead to a release of wastes from the LAW container buffer storage containment building. The inspection and monitoring schedule and methods that will be used to detect releases from the unit are included in DWP Attachment 51, Chapter 6.

4.2.4.11 HLW Melter Cave No. 1 Containment Building (H-0117, H-0116B, H-0310A) and HLW Melter Cave No. 2 Containment Buildings (H-0106, H-0105B, H-0304A)

~~There are six containment buildings located within the HLW vitrification plant~~. The HLW melter cave no. 1 and HLW melter cave no. 2 containment buildings are located in the central portion of the HLW vitrification plant. Each of the containment buildings will ~~be compromised of~~ house an HLW melter cave, an overpack C3/C5 airlock, and an equipment decontamination area.

Typical waste management activities performed in these containment buildings include the dismantling and packaging of spent consumables and decontamination of equipment for hands-on maintenance. The types of spent consumables will include waste recirculators, lid heaters, bubblers, thermocouples, and jumpers. When spent consumables are ready for change out, they will be placed on a consumable storage rack while awaiting size reduction. The consumables will be reduced in size by dismantling or cutting the spent equipment, or both. This process will be remotely conducted on tables in the containment building. The spent consumables will be placed in baskets and lowered into containers in a transfer tunnel that passes under the HLW melter cave no. 1 and 2 containment buildings (H-0117, H-0116B, H-0310A and H-0106, H-0105B, H-0304A). The C3/C5 airlocks ~~cells~~will be used for packing or unpacking melters or their components.

In case of a HLW melter failure, the melter will be evaluated for meeting the receiving TSD waste acceptance criteria, particularly in terms of the radiological contamination in the HLW glass residue present in the melter, before it is placed in an overpack.

The equipment decontamination area located within the melter cave containment building will house the Decontamination Tanks (HSH-TK-00001/2) where equipment removed from the melter cave will be decontaminated prior to maintenance. The equipment will be initially decontaminated by soaking in the decontamination tank. After evaluation, additional decontamination may be performed using manipulators before the levels are acceptable for hands-on maintenance.

Located within the melter cave containment building will be the HLW melter; the submerged bed scrubber and HEMEs, which will function as part of the melter offgas system, the Feed Preparation Vessels (HFP-VSL-00001/5), and the HLW Melter Feed ~~tank~~Vessels (HFP-VSL-00002/6). These tank systems will have secondary containment and are addressed section 4.2.2. ~~Therefore, there is no need for secondary containment within the containment building, as the tank systems meet the requirements WAC 173-303-640.~~

HLW Melter Cave No. 1 and HLW Melter Cave No. 2 Containment Building Design

The two HLW melter containment buildings are completely enclosed within the HLW vitrification plant. Each ~~unit~~ of the melter cave containment buildings will house an HLW melter cave, an overpack C3/C5 airlock cell, and an equipment decontamination area. ~~Each~~Both melter cave containment buildings are designed to prevent the release of dangerous constituents and exposure to the outside environment. The design and construction of the HLW vitrification plant exterior will prevent water from running into the plant. The roof of the HLW vitrification plant will be metal. Run-off will be collected by roof drains and a drainage system with overflow roof drains.

~~The only other sources of liquids that will be present in the caves is the water line to the two film cooler pipe washout spray rings, and the melter water jacket and connecting piping. These clean water lines will be instrumented to detect leaks automatically. A rupture of either water line would be an abnormal event and would require corrective measures. Corrective action would start with closure of the supply line and draining of remaining water outside the caves, and could require feed cutoff and melter idling or shut down. The amount of water that could be released in the containment building would be unlikely to exceed a few gallons, which would rapidly evaporate into the ambient air due to the high temperature in the caves under normal operating conditions.~~

The containment building design requirements of 40 CFR 264.1101(b) do not apply because the liquid dangerous wastes managed in the HLW melter containment building are addressed under tank systems (see section 4.2.2).

HLW Melter Cave No. 1 and HLW Melter Cave No. 2 Containment Building Structure

The HLW melter cave no. 1 and 2 containment buildings will be a fully enclosed, concrete-walled structure within the HLW vitrification plant. Therefore, its structural requirements will be met by the design standards of the HLW vitrification plant. The design will ensure that the unit has sufficient structural strength to prevent collapse or failure. DWP Attachment 51, Supplement 1 provides documentation that the seismic requirements for the HLW vitrification plant meet or exceed the Uniform Building Code Seismic Design Requirements. ~~The seismic requirements for the HLW vitrification plant are found in the RPP-WTP Compliance with Uniform Building Code Seismic Design Requirements, found in Supplement 1~~

HLW Melter Cave No. 1 and HLW Melter Cave No. 2 Containment Building Materials

The HLW melter cave no. 1 and 2 containment buildings will be constructed of steel-reinforced concrete. The interior floor and a portion of the walls of the unit will be lined with stainless steel, except for the C3/C5 airlock. The height of the lining is summarized in Table 4-11.

~~The roof of the HLW vitrification plant will consist of metal roofing, roof insulation, and a vapor barrier. Run-off will be collected by roof drains and a drainage system with overflow roof drains.~~

Use of Incompatible Materials for the HLW Melter Cave No. 1 and HLW Melter Cave No. 2 Containment Buildings

A partial stainless steel liner will be provided for the containment buildings, except for the C3/C5 airlock. The C3/C5 airlock will be partially lined with a protective coating. The stainless steel will be compatible with the wastes that will be managed, which will include spent~~failed~~ melters and consumables, including air spargers, metallic parts, and refractory bricks. Treatment reagents that could cause the liner to leak, corrode, or otherwise fail will not be used within the unit.

Primary Barrier Integrity in the HLW Cave No. Melter 1 and HLW Melter Cave No. 2 Containment Buildings

The HLW melter cave no. 1 and 2 containment buildings are designed to withstand loads from the movement of personnel, wastes, and handling equipment. The seismic design criteria found in DWP Attachment 51, Supplement 1 ensures that appropriate design loads, load combinations, and structural acceptance criteria are employed at the WTP.

Certification of Design for the HLW Cave No. Melter 1 and HLW Melter Cave No. 2 Containment Buildings

Prior to initial receipt of dangerous and mixed waste, certification by a qualified registered professional engineer that the HLW melter containment building meets the design requirements of 40 CFR 264.1101(a) and (c) will be obtained. The requirements of 40 CFR 264.1101(b) do not apply to this design because liquid dangerous wastes present in the containment building will be managed in tank systems with secondary containment systems, as presented in section 4.2.2.

Operation of the HLW Melter Cave No. 1 and HLW Melter Cave No. 2 Containment Buildings

Operational and maintenance controls and practices will be established and followed to ensure containment of the wastes within the HLW melter containment building, as required by 40 CFR 264.1101(c)(1).

Maintenance of the HLW Melter Cave No. 1 and HLW Melter Cave No. 2 Containment Buildings

The partial stainless steel lining of the containment building will be designed and constructed ~~and maintained~~in a manner that will be free of significant cracks, gaps, corrosion, or other deterioration. The liner will be welded at each seam. The stainless steel liner will be free of corrosion or other deterioration because it will be compatible with materials that will be managed in the containment building, which will include spent melters and spent ~~failed~~equipment. Only decontamination chemicals that are compatible with the liner will be used.

Wastes managed in the containment building will not be stacked. In general, waste will be placed in containers and removed from the containment building.

Measures to Prevent Tracking Wastes from the HLW Melter Cave No. 1 and HLW Melter Cave No. 2 Containment Building

The HLW melter cave no. 1 and 2 containment building design and operating methods include several measures that will prevent wastes from being tracked from the unit. Measures that will be implemented include:

- Limiting the movement of personnel and material from the C3/C5 airlock
- Using ~~interlocked~~shield doors to prevent the inadvertent spread of contamination
- Decontaminating materials or containers before they are released from the unit

- Using C5 ventilation as a primary containment method

Personnel access to the HLW melter caves, which are classified as a C5 contamination area, will be restricted ~~due to radiological concerns~~. Personnel operating in melter cave C3/C5 airlocks will not be in contact with ~~failed~~spent melters because they will be encased in overpack containers.

Export of equipment from the melter caves will be kept to a minimum by performing in-cave maintenance to the maximum extent possible. The design of the cave and equipment includes master-slave manipulators, special tools, and a tool import port that will enable maintenance operations to be conducted remotely without removing the equipment from the cave. When equipment must be removed for hands-on maintenance, it will be transferred through shield doors into the Decontamination Tank (HSH-TK-00001/2) or the crane decontamination area (C3/C5) above the C3/C5 airlock. ~~The C3/C5 doors will be interlocked with shield doors to the adjacent maintenance room, to prevent radiological shine and the spread of contamination~~ The equipment will be transferred to the maintenance room only after it has been decontaminated in Decontamination Tank HSH-TK-00001/2, and in the equipment decontamination area, if needed.

Spent consumables and wastes will be size-reduced in the cave and exported to drums through an air lock, which is designed to provide containment of contamination between the C5 melter cave and the C3 drum transfer tunnel. Export of ~~failed~~spent Melters will be controlled to prevent the spread of contamination. Melters will be transferred into overpack containers that are docked with the shield doors to the C3/C5 airlock.

~~Control of Fugitive Dust from the HLW Melter 1 and 2 Containment Buildings~~
~~Operational controls and the HLW vitrification plant ventilation system will be used to control fugitive dust emissions from the unit to meet the requirements of 40 CFR 264.11101(c)(1)(iv). The following measures will be used to prevent dust from escaping the HLW melter 1 and 2 containment buildings:~~

- ~~A cascading air flow from areas of least to greatest potential contamination (i.e., C2 to C3 to C5)~~
- ~~Greater negative air pressure in the unit, compared with adjacent C3 units, to pull air into the unit and prevent backflow~~
- ~~Intake air through controlled air in-bleed units, with backflow prevention dampers~~
- ~~Dual HEPA filtration of exhaust air before discharge to the atmosphere through a monitored stack~~
- ~~A multiple fan extraction system, designed to maintain negative pressure and cascading air flow, even during fan maintenance and repair~~
- ~~Personnel ingress and egress through airlocks and subchange rooms~~

Procedures in the Event of Release or Potential for Release from the HLW Melter Cave No. 1 and HLW Melter Cave No. 2 Containment Buildings

Conditions that could lead to a release from the HLW melter cave no. 1 and HLW melter cave no. 2 containment buildings will be corrected as soon as possible after they are identified. ~~The ventilation system and airlocks, the most likely sources of potential releases, are designed with backup HEPA filters to facilitate repairs and replacement.~~

In the unlikely event of a release of dangerous wastes from either containment building, actions required by 40 CFR 264.1101(c)(3)(i) through (iii) will be taken. Specific administrative and operating methods to satisfy this requirement will be developed prior to initial receipt of dangerous and mixed waste.

Inspections of the HLW Melter Cave No. 1 and HLW Melter Cave No. 2 Containment Buildings

An inspection program will be established as required under WAC 173-303-695 to detect conditions that could lead to the release of wastes from the HLW melter cave no. 1 and HLW melter cave no. 2 containment buildings. The inspection and monitoring schedule and methods that will be used to detect a release from the unit are included in DWP Attachment 51, Chapter 6.

4.2.4.12 IHLW ~~Container Weld~~Canister Handling Cave Containment Building (H-0136)

The HLW ~~container weld~~canister handling cave containment building will be located in the southern portion of the HLW vitrification plant. Typical waste management activities performed within this containment building include the storage of waste canisters and containerized secondary waste. Located within the containment building will be two cooling and buffer storage areas and two container welding and rework stations. IHLW ~~containers~~canisters that have cooled enough to leave the pour areas will be transported to the ~~IHLWcontainer weld~~canister handling cave containment building by means of an overhead crane. The IHLW glass waste will continue to cool in the buffer storage areas. When adequately cooled, ~~containers~~canisters will be moved to one of the two weld and rework stations, where the lid will be welded onto the ~~container~~canister. The IHLW canister will then be transported to the IHLW~~container~~ canister~~decontamination~~ swabbing and monitoring cave containment building. Container management practices are discussed in section 4.2.1.

IHLW ~~Container Weld~~Canister Handling Cave Containment Building Design

The IHLW canister handling cave containment building will be completely enclosed within the HLW vitrification plant. The design and construction of the HLW vitrification plant exterior will prevent water from running into the plant. The roof of the HLW vitrification plant will be metal. Run-off will be collected by roof drains and a drainage system with overflow roof drains. The unit is designed to prevent the release and exposure of dangerous constituents to the outside environment. Its approximate dimensions are summarized in Table 4-12.

IHLW ~~Container Weld~~ Canister Handling Cave Containment Building Structure

Because the IHLW ~~container weld~~ canister handling cave containment building will be a concrete-walled structure fully enclosed within the HLW vitrification plant, its structural requirements will be met by the design standards of the HLW vitrification plant. The design will ensure that the unit has sufficient structural strength to prevent collapse or failure. DWP Attachment 51, Supplement 1 provides documentation that the seismic requirements for the

HLW vitrification plant meet or exceed the Uniform Building Code Seismic Design Requirements. ~~The seismic requirements for the structure are addressed in the RPP-WTP Compliance with Uniform Building Code Seismic Design Requirements, found in Supplement 1.~~

IHLW ~~Container Weld~~Canister Handling Cave Containment Building Unit Materials

The IHLW ~~container weld~~canister handling cave containment building will be constructed of steel-reinforced concrete. The interior floor and a portion of the walls of the unit will be lined with stainless steel. The height of the lining will be a minimum of 0.5 feet. ~~determined as design progresses. The roof of the HLW vitrification plant will be metal. Run-off will be collected by roof drains and a drainage system with overflow roof drains.~~

Use of Incompatible Materials for the IHLW ~~Container Weld~~Canister Handling Cave Containment Building

The partial stainless steel liner will be provided for the IHLW containment building that will be compatible with the ~~IHLW~~steel ~~containers~~canisters that will be managed. Treatment reagents that could cause the liner to leak, corrode, or otherwise fail will not be used in the unit.

Primary Barrier Integrity in the IHLW ~~Container Weld~~Canister Handling Cave Containment Building

The HLW vitrification plant is designed to withstand loads from the movement of personnel, wastes, and handling equipment. The seismic design criteria found in DWP Attachment 51, Supplement 1 ensures that appropriate design loads, load combinations, and structural acceptance criteria are employed at the WTP.

Certification of Design for the IHLW ~~Container Weld~~Canister Handling Cave Containment Building

Prior to initial receipt of dangerous and mixed waste, certification by a qualified registered professional engineer that the IHLW ~~container weld~~canister handling cave containment building meets the design requirements of 40 CFR 264.1101(a) and (c) will be obtained. The requirements of 40 CFR 264.1101(b) do not apply to this design because waste containing free liquid ~~wastes~~ will not be managed in the containment building and the waste will not be treated with free liquids.

Operation of the IHLW ~~Container Weld~~Canister Handling Cave Containment Building

Operational and maintenance controls and practices will be established to ensure containment of the wastes within the IHLW ~~container weld~~canister handling cave containment building, as required by 40 CFR 264.1101(c)(1).

Maintenance of the IHLW ~~Container Weld~~Canister Handling Cave Containment Building

The partial stainless steel lining of the containment building will be constructed and maintained in a manner that will be free of significant cracks, gaps, corrosion, or other deterioration. The stainless steel liner will be welded at each seam, and will be free of corrosion or other deterioration because it will be compatible with materials that will be managed in the containment building, including the stainless steel containers. Only decontamination chemicals that are compatible with the liner will be used.

Wastes that will be managed in the containment building will not be stacked higher than the unit wall; however, wastes are not anticipated to be stacked.

Measures to Prevent Tracking Wastes from the IHLW ~~Container weld~~Canister Handling Cave Containment Building

The IHLW ~~container weld~~canister handling cave containment building is designed to store cooling IHLW glass waste containers and weld the lids onto the containers.

The outside of the ~~container~~canister will be inspected to see whether glass is present on the container. If glass is found, it will be removed using a needle gun or other mechanical method. The glass shards will be collected for disposal in a shop-type vacuum and disposed of as a secondary waste. The containment building will be classified as a C5 contamination area, and therefore personnel access will be ~~limited~~restricted~~due to radiological concerns~~. Wastes leaving the unit will be within containers.

~~Control of Fugitive Dust from the IHLW Container Weld Containment Building~~

~~Operational controls and the HLW vitrification plant ventilation system will be used to control fugitive dust emissions from the unit to meet the requirements of 40 CFR 264.11101(c)(1)(iv). The following measures will be used to prevent dust from escaping the IHLW container weld containment building:~~

- ~~A cascading air flow from areas of least to greatest potential contamination (i.e., C2 to C3 to C5)~~
- ~~Greater negative air pressure in the unit compared with adjacent C3 units, to pull air into the unit and prevent backflow~~
- ~~Intake air through controlled air in-bleed units, with backflow prevention dampers~~
- ~~Dual HEPA filtration of exhaust air before discharge to the atmosphere through a monitored stack~~
- ~~A multiple fan extraction system, designed to maintain negative pressure and cascading air flow, even during fan maintenance and repair~~
- ~~Personnel ingress and egress through airlocks and subchange rooms~~

Procedures in the Event of Release or Potential for Release from the IHLW ~~Container Weld~~ Canister Handling Cave Containment Building

Conditions that could lead to a release from the IHLW ~~container weld~~canister handling cave containment building will be corrected as soon as possible after they are identified. ~~The ventilation system, as the most likely source of potential releases, is designed with backup HEPA filters to facilitate repairs and replacement.~~

In the unlikely event of a release of dangerous wastes from the containment building, actions required by 40 CFR 264.1101(c)(3)(i) through (iii) will be taken. Specific administrative and operating methods to satisfy this requirement will be developed prior to initial receipt of dangerous and mixed waste.

Inspections of the IHLW ~~Container Weld~~Canister Handling Cave Containment Building
An inspection program will be established as required under WAC 173-303-695 to detect conditions that could lead to the release of wastes from the IHLW ~~container weld~~canister handling cave containment building. The inspection and monitoring schedule and methods that will be used to detect a release from the unit are included in DWP Attachment 51, Chapter 6.

4.2.4.13 IHLW ~~Container~~ Canister ~~Decontamination~~Swab and Monitoring Cave Containment Building (H-0133)

The IHLW ~~container~~canister~~decontamination~~ swab and monitoring cave containment building is located in the southeast ~~corner~~ portion of the HLW vitrification plant (room H-0133). ~~Typical waste management activities performed in this containment building include decontamination of the exterior of the filled IHLW containers~~ The systems associated with the swabbing and monitoring activities in the cave include overhead crane, grapples, power manipulator, swabbing turntable, and swabbing waste storage container.

~~IHLW containers, which have permanent lids, will be received at the unit. The containers will be washed in a tank with de-ionized water to remove loose contamination that may be on the surface of the container. The container will then be washed with cerci nitrate and nitric acid to remove a layer of steel as part of the decontamination process. The tank will be drained and the container will then be sprayed with nitric acid. Additional nitric acid rinses may be conducted, if needed. A deionizer water spray will then be performed. Tank activities will occur in permitted tank systems which have secondary containment, as addressed in Section 4.2.2.~~

After decontamination in the Canister Decon Vessels (HDH-VSL-00002/4), the canister is moved to the canister swab and monitoring building and placed on the turntable. The turntable provides a base on which the canister is set and rotated while the surface swabbing is performed. When surface cleanliness has been verified, the canister is placed in the canister storage bogie and transferred to the canister storage cave. ~~container has dried it will be transferred to the swabbing station, where its exterior will be swabbed, and the swabs monitored for gamma radiation. When the container is found to meet surface radiological requirements, it will be transferred to the IHLW container storage area.~~

IHLW ~~Container~~Canister~~Decontamination~~ Swab and Monitoring Cave Containment Building Design
The IHLW ~~container~~canister ~~decontamination~~swab and monitoring cave containment building will be completely enclosed within the HLW vitrification plant, and will be designed to prevent the release of dangerous constituents and their exposure to the outside environment. The design and construction of the HLW vitrification plant exterior will prevent water from running into the plant. The roof of the HLW vitrification plant will consist of metal roofing, roof insulation, and a vapor barrier. Run-off will be collected by roof drains and a drainage system with overflow roof drains. Unit dimensions are summarized in Table 4-12.

The containment building design requirements of 40 CFR 264.1101(b) do not apply because there are no liquid wastes managed in the IHLW ~~container~~canister ~~decontamination~~swab and monitoring cave containment building. ~~Are addressed under tank systems in Section 4.2.2~~

IHLW ~~Container~~Canister ~~Decontamination~~Swab and Monitoring Cave Containment Building Structure

Because the IHLW ~~container~~canister ~~decontamination~~swab and monitoring cave building will be a concrete-walled structure fully enclosed within the HLW vitrification plant, its structural requirements will be met by the design standards of the HLW vitrification plant. The design will ensure that the unit has sufficient structural strength to prevent collapse or failure. DWP Attachment 51, Supplement 1 provides documentation that the seismic requirements for the HLW vitrification plant meet or exceed the Uniform Building Code Seismic Design Requirements. ~~The seismic requirements that the building must address are presented in the RPP-WTP Compliance with Uniform Building Code Seismic Design Requirements, found in Supplement 1.~~

IHLW ~~Container~~ Canister ~~Decontamination~~Swab and Monitoring Cave Containment Building Unit Materials

The IHLW ~~container~~canister ~~decontamination~~swab and monitoring cave containment building will be constructed of steel-reinforced concrete. The interior floor and a portion of the walls of the unit will be ~~lined~~covered with protective coating. ~~The roof of the HLW vitrification plant will consist of metal roofing, roof insulation, and a vapor barrier. Run-off will be collected by roof drains and a drainage system with overflow roof drains~~.

Use of Incompatible Materials for the IHLW Canister ~~Container~~Swab~~Decontamination~~ and Monitoring Cave Containment Building

~~A stainless steel liner will be provided for the containment building and will be compatible with the IHLW containerized wastes that will be managed.~~ Treatment reagents that could cause the ~~liner~~protective coating to leak, corrode, or otherwise fail will not be used within the unit.

Primary Barrier Integrity in the IHLW ~~Container~~Canister ~~Decontamination~~Swab and Monitoring Cave Containment Building

The IHLW ~~container~~canister ~~decontamination~~ swab and monitoring cave building is designed to withstand loads from the movement of personnel, wastes, and handling equipment. The seismic design criteria found in DWP Attachment 51, Supplement 1 ensures that appropriate design loads, load combinations, and structural acceptance criteria are employed at the WTP.

Certification of Design for the IHLW ~~Container~~ Canister ~~Decontamination~~ Swab and Monitoring Cave Containment Building

Prior to initial receipt of dangerous and mixed waste, certification by a qualified registered professional engineer that the IHLW ~~container~~canister ~~decontamination~~ swab and monitoring cave containment building meets the design requirements of 40 CFR 264.1101(a) and (c) will be obtained. The requirements of 40 CFR 264.1101(b) do not apply to this design because there are no free liquids managed in the unit.~~are addressed under tank systems in Section 4.2.2.~~

Operation of the IHLW ~~Container~~ Canister ~~Decontamination~~ Swab and Monitoring Cave Containment Building

Operational and maintenance controls and practices will be established to ensure containment of the wastes within the IHLW canister swab and monitoring cave containment building, as required by 40 CFR 264.1101(c)(1).

Maintenance of the IHLW ~~Container~~ Canister ~~Decontamination~~ Swab and Monitoring Cave Containment Building

The ~~stainless steel lining~~protective coating of the containment building will be maintained in a manner that will be free of significant cracks, gaps, corrosion, or other deterioration. ~~The stainless steel liner will be welded at each seam, and will be free of corrosion or other deterioration because it will be compatible with materials that will be managed in the containment building, as well as the stainless steel containers that will be managed~~. Only decontamination chemicals that are compatible with the protective coating will be used. Wastes are not expected to be stacked within the unit.

Measures to Prevent Tracking Wastes from the IHLW ~~Container~~ Canister ~~Decontamination~~ Swab and Monitoring Cave Containment Building

The IHLW ~~container~~canister ~~decontamination~~ swab and monitoring cave containment building is designed to manage ~~containers~~canisters ~~which~~ that are ~~undergo decontamination in tank systems and to swab the containers~~ swabbed to determine whether ~~decontamination has been effective~~they meet the surface radiological requirements. The containment building will be a ~~C5~~C3 area. ~~Conducting these activities in a C5 zone will prevent the spread of contaminated materials. The containment building is under negative pressure and therefore no air particulates can escape the unit.~~ The air from the unit passes through HEPA filtration prior to discharge out of the plant stack.

Personnel access to the ~~IHLW container~~ canister ~~decontamination~~swab and monitoring cave containment building, which is classified as a ~~C5~~C3 ~~contamination~~area, will be limited~~due to radiological concerns~~. Therefore, personnel moving into and out of the unit will not track contamination out of the unit.

~~Control of Fugitive Dust form the IHLW Container Decontamination Containment Building~~

~~Operational controls and the HLW vitrification plant ventilation system will be used to control fugitive dust emissions from the unit to meet the requirements of 40 CFR 264.11101(c)(1)(iv). The following measures will be used to prevent fugitive dust from escaping the IHLW container decontamination containment building.~~

- ~~A cascading air flow from areas of least to greatest potential contamination (i.e., C2 to C3 to C5)~~
- ~~Greater negative air pressure in the unit, compared to adjacent C3 units, to pull air into the unit and prevent backflow~~
- ~~Intake air through controlled air in-bleed units with backflow prevention dampers~~
- ~~Safety interlocks to shut down C3 extract fans to prevent backflow if the C5 system shuts down~~

- ~~Dual HEPA filtration of exhaust air before discharge to the atmosphere through a monitored stack~~
- ~~A multiple fan extraction system, designed to maintain negative pressure and cascading air flow, even during fan maintenance and repair~~
- ~~Personnel ingress and egress through airlocks and subchange rooms~~

Procedures in the Event of Release or Potential for Release from the IHLW ~~Container~~ Canister ~~Decontamination~~ Swab and Monitoring Cave Containment Building
Conditions that could lead to a release from the IHLW ~~container~~canister ~~decontamination~~ swab and monitoring cave containment building will be corrected as soon as possible after they are identified. ~~The ventilation system, the most likely source of potential releases, is designed with two stages of HEPA filters with backup HEPA filters to facilitate repairs and replacement.~~

In the unlikely event of a release of dangerous wastes from the containment building, actions required by 40 CFR 264.1101(c)(3)(i) through (iii) will be taken. Administrative and operating methods to satisfy this requirement will be developed prior to initial receipt of dangerous and mixed waste.

Inspections of the IHLW ~~Container~~ Canister ~~Decontamination~~ Swab and Monitoring Cave Containment Building
An inspection program will be established as required under WAC 173-303-695 to detect conditions that could lead to release of wastes from the IHLW ~~container~~canister ~~decontamination~~ swab and monitoring cave containment building. The inspection and monitoring schedule and methods that will be used to detect a release are included in DWP Attachment 51, Chapter 6.

4.2.4.14 ~~HLW Vitrification Plant~~ C3 Workshop Containment Building (H-0311A, H-0311 B)

The ~~HLW Vitrification Plant~~ C3 workshop containment building will be located in the northeast side of the HLW vitrification plant at elevation 37 ft.

Typical waste management activities performed in this containment building include decontamination, size reduction, and packaging of spent equipment. Equipment will be transported to the unit contained in shielded casks, drums, or in a standard waste box. In the workshop, the equipment will be decontaminated to enable hands-on maintenance. Spent equipment parts will be bagged and placed in standard waste containers or boxes for disposal. Size reduction may be performed to facilitate packaging. Other spent equipment will be packaged in drums or standard waste boxes.

~~HLW Vitrification Plant~~ C3 Workshop Containment Building Design
The ~~HLW Vitrification Plant~~ C3 workshop containment building will be designed as a completely enclosed area within the HLW vitrification plant. It will be designed to prevent the release of dangerous waste and their exposure to the outside environment. The design and construction of the HLW vitrification plant exterior will prevent water from running into the plant. The roof of the HLW vitrification plant will consist of metal roofing, roof insulation, and

vapor barrier. Rainwater run-off will be collected by roof drains and drainage systems with overflow roof drains. The approximate dimensions of the unit are summarized in Table 4-12.

~~HLW Vitrification Plant~~ C3 Workshop Containment Building Structure

The ~~HLW Vitrification Plant~~ C3 workshop containment building will be a concrete-walled structure fully enclosed within the HLW vitrification plant. Therefore, structural requirements for the containment building will be met by the design standards of the HLW vitrification plant. The design will ensure that the unit has sufficient structural strength to prevent collapse or failure. DWP Attachment 51, Supplement 1 provides documentation that the seismic requirements for the HLW vitrification plant meet or exceed the Uniform Building Code Seismic Design Requirements. ~~The seismic requirements for the HLW vitrification plant are presented in RPP-WTP Compliance with Uniform Building Code Seismic Design Requirements, found in Supplement 1.~~

~~HLW Vitrification Plant~~ C3 Workshop Containment Building Materials

The ~~HLW Vitrification Plant~~ C3 workshop containment building will be constructed of steel-reinforced concrete. The interior floor and a portion of the walls of the unit will be lined with stainless steel or protective coating. ~~The roof of the HLW vitrification plant will consist of metal roofing, roof insulation, and vapor barrier. Rainwater run-off will be collected by roof drains and drainage systems with overflow roof drains.~~

Use of Incompatible Materials in the ~~HLW Vitrification Plant~~ C3 Workshop Containment Building

A partial stainless steel liner or protective coating will be provided for this unit. Stainless steel or the protective coating will be compatible with the equipment wastes that will be managed. Activities in the unit will be limited to decontamination, size reduction, and packaging the waste components into drums or waste boxes. Treatment reagents that could cause the liner or coating to leak, corrode, or otherwise fail will not be used within the unit.

Primary Barrier Integrity in the ~~HLW Vitrification Plant~~ C3 Workshop Containment Building

The C3 workshop containment building is designed to withstand loads from the movement of personnel, wastes, and handling equipment. The seismic design criteria found in DWP Attachment 51, Supplement 1 ensures that appropriate design loads, load combinations, and structural acceptance criteria are employed at the WTP.

Certification of Design for the ~~HLW Vitrification Plant~~ C3 Workshop Containment Building

Prior to initial receipt of dangerous and mixed waste, a certification by a qualified registered professional engineer that the ~~HLW Vitrification Plant~~ C3 workshop containment building meets the design requirements of 40 CFR 264.1101(a) and (c) will be obtained. The requirements of 40 CFR 264.1101(b) do not apply to this design because the waste managed in the unit will not contain free liquids or be treated with free liquids.

Operation of the ~~HLW Vitrification Plant~~ C3 Workshop Containment Building

Operational and maintenance controls and practices will be established and followed to ensure containment of the dangerous wastes within the ~~HLW Vitrification Plant~~ C3 workshop containment building unit as required by 40 CFR 264.1101(c)(1).

Maintenance of the ~~HLW Vitrification Plant~~ C3 Workshop Containment Building

The concrete and protective coating, where used, will be constructed and maintained in a manner that will be free of significant cracks, gaps, corrosion, or other deterioration. The concrete and protective coating, where used, will remain free of corrosion or other deterioration because it is compatible with materials that will be managed in the containment building. The failed equipment that will be managed in the containment building unit will be compatible with the concrete or protective coating, where used. Only decontamination chemicals that are compatible with the concrete or protective, where used, will be applied.

Measures to Prevent Tracking Wastes from the ~~HLW Vitrification Plant~~ C3 Workshop Containment Building

The ~~HLW Vitrification Plant~~ C3 workshop containment building will be designed to isolate failed equipment from the accessible environment and to prevent the spread of contaminated materials. Very little dust is expected to be generated in the unit.

~~Personnel access to~~The containment building will be ~~limited due to radiological concerns. It will be~~ classified as a C3 contamination area, which allows only limited access by personnel. Personnel access will be via a C2/C3 subchange room. Equipment will enter and exit the workshop via a C2/C3 airlock. Wastes leaving the unit will be enclosed within containers. If necessary, the containers will be decontaminated in the unit prior to transportation to a permitted storage area. Equipment leaving the unit will be decontaminated, when necessary, before being released for removal from the cells.

~~Control of Fugitive Dust from the HLW Vitrification Plant C3 Workshop Containment Building~~

~~The following measures will be used to prevent fugitive dust from escaping the HLW vitrification plant C3 workshop containment building:~~

- ~~A cascading air flow from areas of least to greatest potential contamination (i.e., C2 to C3 to C5)~~
- ~~Intake air through controlled air in-bleed units, with backflow prevention dampers~~
- ~~Dual HEPA filtration of exhaust air before discharge to the atmosphere through a monitored stack~~
- ~~A multiple fan extraction system designed to maintain negative pressure and cascading air flow, even during fan maintenance and repair~~
- ~~Personnel ingress and egress through airlocks and subchange rooms~~

Procedures in the Event of Release or Potential for Release from the ~~HLW Vitrification Plant~~ C3 Workshop Containment Building

The design and operation of the unit makes it very unlikely that releases will occur. The design and operational measures will minimize the generation of dust and contain it within the unit. ~~The ventilation system will also use negative air pressure to keep contamination from areas of lesser contamination, and will use two-stage HEPA filtration to reduce the release of particles. Inspections will identify conditions that could lead to a release. Such conditions will be corrected as soon as possible after they are identified.~~ In the unlikely event that a release of dangerous wastes from the containment building is detected, actions required by 40 CFR 264.1101(c)(3)(i) through (iii) will be taken. Specific administrative and operating methods that will be used to satisfy this requirement will be developed prior to initial receipt of dangerous and mixed waste These methods will be followed to repair conditions that could lead to a release.

Inspections of the ~~HLW Vitrification Plant~~ C3 Workshop Containment Building

An inspection program will be established to detect conditions that could lead to a release of wastes from the ~~HLW Vitrification Plant~~ C3 workshop containment building. The inspection and monitoring schedule and methods that will be used to detect releases from the unit are included in DWP Attachment 51, Chapter 6.

4.2.4.15 ~~HLW Vitrification Plant Air Filtration~~Filter Cave Containment Building (H-0104)

The ~~HLW Vitrification Plant Air Filtration~~filter cave containment building is located in the northwest portion of the plant. The ~~HLW Vitrification Plant Air Filtration~~filter cave containment building will manage spent HEPA filters via an overhead crane. The crane transports the spent filters to a disposal container. The disposal container is then transported via cart, through an air lock and shield doors and to a load-out area for storage pending final disposal. The containment building also houses a hands-on crane decontamination and repair area.

~~HLW Vitrification Plant Air Filtration~~Filter Cave Containment Building Design

The ~~HLW Vitrification Plant Air Filtration~~filter cave containment building will be completely enclosed within the HLW vitrification plant, and will be designed to prevent the release and exposure of dangerous constituents to the outside environment. The design and construction of the HLW vitrification plant exterior will prevent water from running into the plant. The roof of the HLW vitrification plant will consist of metal roofing, roof insulation, and a vapor barrier. Run-on will be collected by roof drains and a drainage system with overflow drains. The approximate dimensions of the containment building are summarized in Table 4-12.

~~HLW Vitrification Plant Air Filtration~~Filter Cave Containment Building Structure

Because the ~~HLW Vitrification Plant Air Filtration~~filter cave containment building will be a concrete-walled structure fully enclosed within the HLW vitrification plant, its requirements will be met by the design standards of the HLW vitrification plant. The design will ensure that the unit has sufficient structural strength to prevent collapse or failure. DWP Attachment 51, Supplement 1 provides documentation that the seismic requirements for the HLW vitrification plant meet or exceed the Uniform Building Code Seismic Design Requirements. ~~The seismic~~

~~requirements for the HLW vitrification plant are presented in the *RPP-WTP Compliance with Uniform Building Code Seismic Design Requirements*, found in Supplement 1.~~

~~HLW Vitrification Plant Air Filtration~~Filter Cave Containment Building Materials

The ~~HLW Vitrification Plant Air Filtration~~Filter Cave containment building will be constructed of steel-reinforced concrete. The interior floor and a portion of the walls will be lined with a protective coating. ~~The roof of the HLW vitrification plant will consist of metal roofing, roof insulation, and a vapor barrier. Run-on will be collected by roof drains and a drainage system with overflow drains.~~

Use of Incompatible Materials for the ~~HLW Vitrification Plant Air Filtration~~Filter Cave Containment Building

The concrete structure and protective coating, where used, will be compatible with the wastes that will be managed in the unit, which will include spent HEPA ~~and HEME~~filters. Activities in the unit will be limited to HEPA filter change out and waste packaging. Treatment reagents that could cause concrete or protective coating, where used, to leak, corrode, or otherwise fail will not be used within the unit.

Primary Barrier Integrity in the ~~HLW Vitrification Plant Air Filtration~~Filter Cave Containment Building

The ~~HLW Vitrification Plant Air Filtration~~filter cave containment building will be designed to withstand loads from the movement of personnel, wastes, and handling equipment. The seismic design criteria found in DWP Attachment 51, Supplement 1 ensures that appropriate design loads, load combinations, and structural acceptance criteria are employed at the WTP.

Certification of Design for the ~~HLW Vitrification Plant Air Filtration~~Filter Cave Containment Building

Prior to initial receipt of dangerous and mixed waste, certification by a qualified registered professional engineer that the ~~HLW Vitrification Plant Air Filtration~~filter cave containment building meets the design requirements of 40 CFR 264.1101(a) and (c) will be obtained. The requirements of 40 CFR 264.1101(b) do not apply to this design because dangerous waste containing free liquids will not be managed in the unit and waste will not be treated with free liquids.

Operation of the ~~HLW Vitrification Plant Air Filtration~~Filter Cave Containment Building

Operational and maintenance controls and practices will be established to ensure containment of the waste within the ~~HLW Vitrification Plant Air Filtration~~filter cave containment building, as required by 40 CFR 264.1101(c)(1).

Maintenance of the ~~HLW Vitrification Plant Air Filtration~~Filter Cave Containment Building

The ~~protectively coated~~ concrete floor and walls of the unit will be constructed and maintained in a manner that will be free of significant cracks, gaps, corrosion, or other deterioration. The concrete structure ~~protective coating,~~ , will be compatible with materials that will be managed in the containment building, which will include spent HEPA ~~and HEME~~filters. No decontamination chemicals that are incompatible with the ~~coated~~ concrete will be used.

Measures to Prevent Tracking Wastes from the ~~HLW Vitrification Plant Air Filtration~~Filter Cave Containment Building

The ~~HLW Vitrification Plant Air Filtration~~filter cave containment building is designed to manage spent HEPA ~~and HEME~~ filters. Conducting these activities in a ~~C3~~C5 zone will prevent the spread of contaminated materials. ~~Limited personnel access and~~Controlled movement of equipment into and out of the unit will decrease the possibility that waste will be tracked from the unit.

Personnel access to the ~~HLW Vitrification Plant Air Filtration~~filter cave containment building, which is classified as a ~~C3~~C5 contamination area, will be ~~limited due to radiological concerns. Access to the unit will be allowed only under limited circumstances, thereby limiting the potential for contacting the waste and tracking it from the unit~~ restricted.

~~Control of Fugitive Dust from the HLW Vitrification Plant Air Filtration Containment Building~~

~~The following measures will be used to prevent fugitive dust from escaping the HLW vitrification plant air filtration containment building unit.~~

- ~~A cascading air flow from areas of least to greatest potential contamination (i.e., C2 to C3 to C5)~~
- ~~Greater negative air pressure in the unit, compared with adjacent C2 units, to pull air into the unit and prevent backflow~~
- ~~Intake air through controlled air in-bleed units, with backflow prevention dampers~~
- ~~HEPA filtration of exhaust air before discharge to the atmosphere through a monitored stack~~
- ~~A multiple fan extraction system designed to maintain negative pressure, and cascading air flow, even during fan maintenance and repair~~
- ~~Personnel ingress and egress through airlocks and subchange rooms~~

Procedures in the Event of Release or Potential for Release from the ~~HLW Vitrification Plant Air Filtration~~Filter Cave Containment Building

Conditions that could lead to a release from the ~~HLW Vitrification Plant Air Filtration~~ filter cave containment building will be corrected as soon as possible after they are identified. ~~The ventilation system and airlocks, the most likely sources of potential releases, will be designed with backup HEPA filters to facilitate repairs and replacement.~~ In the unlikely event of a release of dangerous wastes from the containment building, actions required by 40 CFR 264.1101(c)(3)(i) through (iii) will be taken. Specific administrative and operating methods that will be used to satisfy this requirement will be developed prior to initial receipt of dangerous and mixed waste.

Inspections of the ~~HLW Vitrification Plant Air Filtration~~Filter Cave Containment Building

An inspection program will be established to detect conditions that could lead to a release of wastes from the ~~HLW vitrification plant air filtration~~ filter cave containment building. The inspection and monitoring schedule and methods that will be used to detect releases from the unit are included in DWP Attachment 51, Chapter 6.

~~4.2.4.12 HLW Vitrification Plant Drum Transfer Tunnel Containment Building~~

~~The HLW vitrification plant drum transfer tunnel containment building stretches east to west, nearly the entire length of the HLW vitrification plant. Typical waste management activities performed in this containment building include size reduction, storage of uncontainerized waste, and packaging of failed and spent equipment.~~

~~HLW Vitrification Plant Drum Transfer Tunnel Containment Building Design~~

~~The HLW vitrification plant drum transfer containment building will be completely enclosed within the HLW vitrification plant, and will be designed to prevent the release and exposure of dangerous constituents to the outside environment. The design and construction of the HLW vitrification plant exterior will prevent water from running into the plant. The approximate dimensions of the containment building are summarized in Table 4-12.~~

~~HLW Vitrification Plant Drum Transfer Tunnel Containment Building Structure~~

~~Because the HLW vitrification plant drum transfer tunnel containment building will be a concrete-walled structure fully enclosed within the HLW vitrification plant, its requirements will be met by the design standards of the HLW vitrification plant. The design will ensure that the unit has sufficient structural strength to prevent collapse or failure. The seismic requirements for the HLW vitrification plant are presented in the~~ ~~*RPP-WTP Compliance with Uniform Building Code Seismic Design Requirements*~~~~, found in Supplement 1.~~

~~HLW Vitrification Plant Drum Transfer Tunnel Containment Building Materials~~

~~The HLW vitrification plant drum transfer tunnel containment building will be constructed of steel-reinforced concrete. The interior floor and a portion of the walls will be lined with a protective coating. The roof of the HLW vitrification plant will consist of metal roofing, roof insulation, and a vapor barrier. Run-on will be collected by roof drains and a drainage system with overflow drains.~~

~~Use of Incompatible Materials for the HLW Vitrification Plant Drum Transfer Tunnel Containment Building~~

~~A protective coating will be provided for the containment building. The coating will be compatible with the wastes that will be managed in the unit, which will include out-of-service process equipment, including pumps, valve, filters, jumpers, and maintenance equipment. Reagents that could cause the liner to leak, corrode, or otherwise fail will not be used within the unit.~~

~~Primary Barrier Integrity in the HLW Vitrification Plant Drum Transfer Tunnel Containment Building~~

~~The HLW vitrification plant drum transfer tunnel containment building will be designed to withstand loads from the movement of wastes and handling equipment. The seismic design criteria found in Supplement 1, ensures appropriate design loads, load combinations, and structural acceptance criteria are employed at the WTP.~~

~~Certification of Design for the HLW Vitrification Plant Drum Transfer Tunnel Containment Building~~

~~Prior to the start of operations, certification by a qualified registered professional engineer that the HLW vitrification plant drum transfer tunnel containment building meets the design requirements of 40 CFR 264.1101(a), (b), and (c) will be obtained.~~

~~Operation of the HLW Vitrification Plant Drum Transfer Tunnel Containment Building~~

~~Operational and maintenance controls and practices will be established to ensure containment of the waste within the HLW vitrification plant drum transfer tunnel containment building, as required by 40 CFR 264.1101(c)(1).~~

~~Maintenance of the HLW Vitrification Plant Drum Transfer Tunnel Containment Building~~

~~The protectively-coated concrete floor and walls of the unit will be constructed and maintained in a manner that will be free of significant cracks, gaps, corrosion, or other deterioration. The protective coating will be compatible with materials that will be managed in the containment building, which will include the out-of-service process equipment and containerized waste and equipment. No decontamination chemicals that are incompatible with the coated concrete will be used.~~

~~Measures to Prevent Tracking Wastes from the HLW Vitrification Plant Drum Transfer Tunnel Containment Building~~

~~The HLW vitrification plant drum transfer tunnel containment building is designed to provide a means to dispose of spent equipment by providing lifting, holding, and transporting of disposal containers. The unit also supports size reduction and packaging of waste containers. Conducting these activities in a C3 zone will prevent the spread of contaminated materials. Limited personnel access and controlled movement of equipment into and out of the unit will decrease the possibility that waste will be tracked from the unit.~~

~~Personnel access to the HLW vitrification plant drum transfer tunnel containment building, which is classified as a C3 contamination area, will be limited due to radiological concerns. Access to the unit will be allowed only under limited circumstances, thereby limiting the potential for contacting the waste and tracking it from the unit.~~

~~Control of Fugitive Dust from the HLW Vitrification Plant Drum Transfer Tunnel Containment Building~~

~~The following measures will be used to prevent fugitive dust from escaping the HLW vitrification plant drum transfer tunnel containment building unit:~~

- ~~A cascading air flow from areas of least to greatest potential contamination (i.e., C2 to C3 to C5)~~
- ~~Greater negative air pressure in the unit, compared with adjacent C2 units, to pull air into the unit and prevent backflow~~
- ~~Intake air through controlled air in-bleed units, with backflow prevention dampers~~
- ~~Dual HEPA filtration of exhaust air before discharge to the atmosphere through a monitored stack~~
- ~~A multiple fan extraction system designed to maintain negative pressure, and cascading air flow, even during fan maintenance and repair~~
- ~~Personnel ingress and egress through airlocks and subchange rooms~~

~~Procedures in the Event of Release or Potential for Release from the HLW Vitrification Plant Drum Transfer Tunnel Containment Building~~

~~Conditions that could lead to a release from the HLW vitrification plant drum transfer tunnel containment building will be corrected as soon as possible after they are identified. The ventilation system and airlocks, the most likely sources of potential releases, will be designed with backup HEPA filters to facilitate repairs and replacement.~~

~~In the unlikely event of a release of dangerous wastes from the containment building, actions required by 40 CFR 264.1101(c)(3)(i) through (iii) will be taken. Specific administrative and operating methods that will be used to satisfy this requirement will be developed prior to the start of operations.~~

~~Inspections of the HLW Vitrification Plant Drum Transfer Tunnel Containment Building~~

An inspection program will be established to detect conditions that could lead to a release of wastes from the HLW vitrification plant drum transfer tunnel containment building. The inspection and monitoring schedule, and methods that will be used to detect releases from the unit, are included in Chapter 6.

4.2.4.16 HLW Pour Tunnel No. 1 Containment Building (H-B032) and HLW Pour Tunnel No. 2 Containment Building (H-B005A)

HLW pour tunnels No. 1 and No. 2 containment building contain bogies that transport empty canisters to the melter pour spout. Each of the two pour tunnels are 11 ft wide by 85 ft 2 in. long extending from the south end of the melter caves in a north-south direction to an area below the canister handling cave. The glass pouring into canisters takes place in the north half of the HLW pour tunnels No.1 and No. 2 containment buildings. After filling with glass, the canisters are allowed to cool down prior to being transported to the south portion of the HLW pour tunnels No.1 and No. 2 containment buildings and transferred through the hatch to the canister handling cave located above. The south portion of the HLW pour tunnels No.1 and No. 2 containment buildings can be used for bogie decontamination, if required, prior to handling in the bogie maintenance area. The bogie maintenance area is segregated from HLW pour tunnels No.1 and No. 2 containment buildings by a shield door. Bogie decontamination is not considered a dangerous waste management activity performed within the boundary of the HLW pour tunnels No.1 and No.2 containment buildings. Contaminated liquids which accumulate in the sumps located in the pour tunnels ~~are considered mixed waste and~~ will be sent to ~~RSL~~RLD-VSL-00008.

HLW Pour Tunnel No. 1 and HLW Pour Tunnel No. 2 Containment Building Design

The HLW pour tunnels No.1 and No. 2 containment buildings will be completely enclosed within the HLW vitrification plant, and will be designed to prevent the release of dangerous constituents and their exposure to the outside environment. The design and construction of the HLW vitrification plant exterior will prevent water from running into the facility. The roof of the HLW vitrification plant will consist of metal roofing, roof insulation, and a vapor barrier. Runoff will be collected by roof drains and a drainage system with overflow roof drains. Unit dimensions are summarized in Table 4-12.

The containment buildings' design requirements of 40 CFR 264.1101(b) do not apply because there are no liquid dangerous wastes managed in the pour tunnels.

HLW Pour Tunnel No. 1 and HLW Pour Tunnel No. 2 Containment Building Structure
Because the HLW pour tunnels No.1 and No. 2 containment buildings will be concrete-walled structures fully enclosed within the HLW vitrification plant, their structural requirements will be met by the design standards of the HLW vitrification plant. The design will ensure that the units have sufficient structural strength to prevent collapse or failure. DWP Attachment 51, Supplement 1 provides documentation that the seismic requirements for the HLW vitrification plant meet or exceed the Uniform Building Code Seismic Design Requirements.

HLW Pour Tunnel No. 1 and HLW Pour Tunnel No. 2 Containment Building Unit Materials
The HLW pour tunnels No.1 and No. 2 containment buildings will be constructed of steel-reinforced concrete. The interior floors and a portion of the walls of the units will be lined with stainless steel to protect the insulation and concrete from the effects of high temperatures.

Use of Incompatible Materials for the HLW Pour Tunnel No. 1 and HLW Pour Tunnel No. 2 Containment Buildings
There are no liquid dangerous wastes managed within the HLW pour tunnels No.1 and No. 2 containment buildings.

Primary Barrier Integrity in the HLW Pour Tunnel No. 1 and HLW Pour Tunnel No. 2 Containment Buildings
The HLW pour tunnels No.1 and No. 2 containment buildings are designed to withstand loads from the movement of wastes and handling equipment. The seismic design criteria found in DWP Attachment 51, Supplement 1 ensures that appropriate design loads, load combinations, and structural acceptance criteria are employed at the WTP.

Certification of Design for the HLW Pour Tunnel No. 1 and HLW Pour Tunnel No. 2 Containment Buildings
Prior to initial receipt of dangerous and mixed waste, certification by a qualified registered professional engineer that the HLW pour tunnels No.1 and No. 2 containment buildings meet the design requirements of 40 CFR 264.1101(a) and (c) will be obtained. The requirements of 40 CFR 264.1101(b) do not apply to this design because no free liquids are managed in the unit.

Operation of the HLW Pour Tunnel No. 1 and HLW Pour Tunnel No. 2 Containment Buildings
Operational and maintenance controls and practices will be established to ensure containment of the wastes within the HLW pour tunnels No.1 and No. 2 containment buildings, as required by 40 CFR 264.1101(c)(1).

Maintenance of the HLW Pour Tunnel No. 1 and HLW Pour Tunnel No. 2 Containment Buildings
The partial stainless-steel liner will be installed in the HLW pour tunnels No.1 and No. 2 containment buildings to protect insulation and concrete from the effects of high temperatures. Waste canisters will not be stacked within the unit.

Measures to Prevent Tracking Wastes from the HLW Pour Tunnel No. 1 and HLW Pour Tunnel No. 2 Containment Buildings

The HLW vitrification plant C5 HLW pour tunnels No.1 and No. 2 containment buildings will be designed to isolate failed equipment from the accessible environment and to prevent the spread of contaminated materials. Very little dust is expected to be generated in the unit.

Personnel access to the HLW pour tunnels No.1 and No. 2 containment buildings will not be allowed because of high radiation.

Control of Fugitive Dust from the HLW Pour Tunnel No. 1 and HLW Pour Tunnel No. 2 Containment Buildings

Operational controls of the HLW vitrification plant ventilation system will be used to control fugitive dust emissions from the units to meet the requirements of 40 CFR 264.1101(c)(1)(iv). The following measures will be used to prevent fugitive dust from escaping the HLW pour tunnels No.1 and No. 2 containment buildings:

- A cascading air flow from areas of least to greatest potential contamination (that is, C2 to C3 to C5)
- Greater negative air pressure in the unit, compared to adjacent C3 units, to pull air into the unit and prevent backflow
- Intake air through controlled air in-bleed units with backflow prevention dampers
- Safety interlocks to shut down C3 extract fans to prevent backflow if the C5 system shuts down
- Dual HEPA filtration of exhaust air before discharge to the atmosphere through a monitored stack
- A multiple fan extraction system, designed to maintain negative pressure and cascading air flow, even during fan maintenance and repair

Procedures in the Event of Release or Potential for Release from the HLW Pour Tunnel No. 1 and HLW Pour Tunnel No. 2 Containment Buildings

Conditions that could lead to a release from the HLW pour tunnels No.1 and No. 2 containment buildings will be corrected as soon as possible after they are identified. In the unlikely event of a release of dangerous wastes from the containment buildings, actions required by 40 CFR 264.1101(c)(3)(i) through (iii) will be taken. Administrative and operating methods to satisfy this requirement will be developed prior to initial receipt of dangerous and mixed waste.

Inspections of the HLW Pour Tunnel No. 1 and HLW Pour Tunnel No. 2 Containment Buildings

An inspection program will be established as required under WAC 173-303-695 to detect conditions that could lead to the release of wastes from the HLW pour tunnel containment buildings. The inspection and monitoring schedule and methods that will be used to detect a release are included in DWP Attachment 51, Chapter 6.

4.2.4.17 HLW Drum Swabbing and Monitoring Area Containment Building (H-0126A, H-0126B, and H-B028)

The HLW drum swabbing and monitoring area containment building is located in the northeast section of the HLW vitrification plant. Typical waste management activities performed in this containment building include the remote handling of 55 US gallon drums. The drums will be swabbed for surface contamination and decontaminated if needed.

Upon arrival in the HLW drum swabbing and monitoring area, the 55 US gallon drums are weighed, monitored, and then transferred through a hatch and placed into a shielded cask in the cask handling area.

In the cask handling area, drum transport casks are remotely lidded and moved to the truck loading bay for removal from the facility.

Drum Swabbing and Monitoring Area Containment Building Design
The drum swabbing and monitoring area containment building will be completely enclosed within the HLW vitrification plant, and will be designed to prevent the release of dangerous constituents and their exposure to the outside environment. The design and construction of the HLW vitrification plant exterior will prevent water from running into the plant. The roof of the HLW vitrification plant will consist of metal roofing, roof insulation, and a vapor barrier. Runoff will be collected by roof drains and a drainage system with overflow roof drains. Unit dimensions are summarized in Table 4-12.

The containment building design requirements of 40 CFR 264.1101(b) do not apply because the liquid dangerous wastes will not be managed in the drum swabbing and monitoring area. If liquid dangerous wastes are stored in 55 US gallon drums, the drums will be provided with portable secondary containment.

HLW Drum Swabbing and Monitoring Area Containment Building Structure
Because the HLW drum swabbing and monitoring area will be a concrete-walled structure fully enclosed within the HLW vitrification plant, its structural requirements will be met by the design standards of the HLW vitrification plant. The design will ensure that the unit has sufficient structural strength to prevent collapse or failure. DWP Attachment 51, Supplement 1 provides documentation that the seismic requirements for the HLW vitrification plant meet or exceed the Uniform Building Code Seismic Design Requirements.

HLW Drum Swabbing and Monitoring Area Containment Building Unit Materials
The HLW drum swabbing and monitoring area containment building will be constructed of steel-reinforced concrete. The interior floor and a portion of the walls of the unit will be covered with special protective coating to protect the concrete from mixed waste contamination.

Use of Incompatible Materials for the HLW Drum Swabbing and Monitoring Area Containment Building

There are no liquid dangerous wastes managed within the HLW drum swabbing and monitoring containment building.

Primary Barrier Integrity in the HLW Drum Swabbing and Monitoring Area Containment Building

The HLW drum swabbing and monitoring area containment building is designed to withstand loads from the movement of personnel, wastes, and handling equipment. The seismic design criteria found in DWP Attachment 51, Supplement 1 ensures that appropriate design loads, load combinations, and structural acceptance criteria are employed at the WTP.

Certification of Design for the HLW Drum Swabbing and Monitoring Area Containment Building

Prior to initial receipt of dangerous and mixed waste, certification by a qualified registered professional engineer that the HLW drum swabbing and monitoring area containment building meets the design requirements of 40 CFR 264.1101(a) and (c) will be obtained. The requirements of 40 CFR 264.1101(b) do not apply to this design because free liquids managed in the unit are addressed under tank systems in section 4.2.2.

Operation of the HLW Drum Swabbing and Monitoring Area Containment Building

Operational and maintenance controls and practices will be established to ensure containment of the wastes within the HLW drum swabbing and monitoring area containment building, as required by 40 CFR 264.1101(c)(1).

Maintenance of the HLW Drum Swabbing and Monitoring Area Containment Building

Personnel access to the containment building will not be allowed because of high radiation. Drums are not normally expected to be stacked within the unit.

Measures to Prevent Tracking Wastes from the HLW Drum Swabbing and Monitoring Area Containment Building

The HLW vitrification plant C5 HLW drum swabbing and monitoring containment building will be designed to isolate failed equipment from the accessible environment and to prevent the spread of contaminated materials. Very little dust is expected to be generated in the unit.

Control of Fugitive Dust from the HLW Drum Swabbing and Monitoring Area Containment Building

Operational controls of the HLW vitrification plant ventilation system will be used to control fugitive dust emissions from the unit to meet the requirements of 40 CFR 264.1001(c)(1)(iv). The following measures will be used to prevent fugitive dust from escaping the HLW drum swabbing and monitoring area containment building:

- A cascading air flow from areas of least to greatest potential contamination (that is, C2 to C3 to C5)

- Greater negative air pressure in the unit, compared to adjacent C3 units, to pull air into the unit and prevent backflow
- Intake air through controlled air in-bleed units with backflow prevention dampers
- Safety interlocks to shut down C3 extraction fans to prevent backflow, if the C5 system shuts down
- Dual HEPA filtration of exhaust air before discharge to the atmosphere through a monitored stack
- A multiple fan extraction system, designed to maintain negative pressure and cascading air flow, even during fan maintenance and repair

Procedures in the Event of Release or Potential for Release from HLW Drum Swabbing and Monitoring Area Containment Building

Conditions that could lead to a release from the HLW drum swabbing and monitoring area containment building will be corrected as soon as possible after they are identified. In the unlikely event of a release of mixed or dangerous wastes from the containment building, actions required by 40 CFR 264.1101(c)(3)(i) through (iii) will be taken. Administrative and operating methods to satisfy this requirement will be developed prior to initial receipt of dangerous and mixed waste.

Inspections of the HLW Drum Swabbing and Monitoring Area Containment Building

An inspection program will be established as required under WAC 173-303-695 to detect conditions that could lead to the release of wastes from the HLW drum swabbing and monitoring area containment building. The inspection and monitoring schedule and methods that will be used to detect a release are include in DWP Attachment 51, Chapter 6.

4.2.4.18 HLW Waste Handling Area Containment Building (H-410B, H-411)

The HLW waste handling area containment building consists of rooms H-410B, and H-411 on the 58 ft elevation of the HLW vitrification plant. Typical waste management activities performed in this containment building include waste sorting, segregation, and providing temporary storage of mixed waste containers (~~that is,~~e.g. spent silver mordenite). The HLW waste handling area containment building will contain floor space for segregated storage of empty and full containers, typically 55 gallon waste drums. Tools and equipment will also be stored in this containment building.

HLW Waste Handling Area Containment Building Design

The HLW waste handling area containment building will be completely enclosed within the HLW vitrification plant, and will be designed to prevent the release of dangerous constituents and their exposure to the outside environment. The design and construction of the HLW vitrification plant exterior will prevent water from running into the plant. The roof of the HLW vitrification plant will consist of metal roofing, roof insulation, and a vapor barrier. Runoff will be collected by roof drains and a drainage system with overflow roof drains. Unit dimensions are summarized in Table 4-12.

The containment building design requirements of 40 CFR 264.1101(b) do not apply because the liquid dangerous wastes will not be managed in the waste handling area. If liquid wastes are stored in 55 US gallon drums, the drums will be provided with portable secondary containment.

HLW Waste Handling Area Containment Building Structure

Because the HLW waste handling area containment building will be a concrete-walled structure fully enclosed within the HLW vitrification plant, its structural requirements will be met by the design standards of the HLW vitrification plant. The design will ensure that the unit has sufficient structural strength to prevent collapse or failure. DWP Attachment 51, Supplement 1 provides documentation that the seismic requirements for the HLW vitrification plant meet or exceed the Uniform Building Code Seismic Design Requirements.

HLW Waste Handling Area Containment Building Unit Materials

The HLW waste handling area containment building will be constructed of steel-reinforced concrete. The interior floor and a portion of the walls of the unit will be covered with special protective coatings to protect the concrete from mixed waste contamination.

Use of Incompatible Materials for the HLW Waste Handling Area Containment Building

There are no liquid dangerous wastes managed within the HLW waste handling area containment building.

Primary Barrier Integrity in the HLW Waste Handling Area Containment Building

The HLW waste handling area containment building is designed to withstand loads from the movement of personnel, wastes, and handling equipment. The seismic design criteria found in DWP Attachment 51, Supplement 1 ensures that appropriate design loads, load combinations, and structural acceptance criteria are employed at the WTP.

Certification of Design for the HLW Waste Handling Area Containment Building

Prior to initial receipt of dangerous and mixed waste, certification by a qualified registered professional engineer that the HLW waste handling area containment building meets the design requirements of 40 CFR 264.1101(a) and (c) will be obtained. The requirements of 40 CFR 264.1101(b) do not apply to this design because free liquids will not be managed in the unit.

Operation of the HLW Waste Handling Area Containment Building

Operational and maintenance controls and practices will be established to ensure containment of the wastes within the HLW waste handling area containment building, as required by 40 CFR 264.1101(c)(1).

Maintenance of the HLW Waste Handling Area Containment Building

Wastes are not normally expected to be stacked within the unit.

Measures to Prevent Tracking Wastes from the HLW Waste Handling Area Containment Building

Wastes leaving the HLW waste handling area containment building will be enclosed within containers. If necessary, these containers will be decontaminated in the unit prior to transportation to another permitted TSD facility.

Control of Fugitive Dust from the HLW Waste Handling Area Containment Building

Operational controls of the HLW vitrification plant ventilation system will be used to control fugitive dust emissions from the unit to meet the requirements of 40 CFR 264.1101(c)(1)(iv). The following measures will be used to prevent fugitive dust from escaping the waste handling area containment building:

- A cascading air flow from areas of least to greatest potential contamination (that is, C2 to C3 to C5)
- Greater negative air pressure in the unit, compared to adjacent C2~~3~~ units, to pull air into the unit and prevent backflow
- Intake air through controlled air in-bleed units with backflow prevention dampers
- Safety interlocks to shut down C3 extraction fans to prevent backflow if the C5 system shuts down
- ~~Dual~~ HEPA filtration of exhaust air before discharge to the atmosphere through a monitored stack
- A multiple fan extraction system, designed to maintain negative pressure and cascading air flow, even during fan maintenance and repair
- Personnel ingress and egress through airlocks and subchange rooms

Procedures in the Event of Release or Potential for Release from HLW Waste Handling Area Containment Building

Conditions that could lead to a release from the HLW waste handling area containment building will be corrected as soon as possible after they are identified. In the unlikely event of a release of dangerous wastes from the containment building, actions required by 40 CFR 264.1101(c)(3)(i) through (iii) will be taken. Administrative and operating methods to satisfy this requirement will be developed prior to initial receipt of dangerous and mixed waste.

Inspections of the HLW Waste Handling Area Containment Building

An inspection program will be established as required under WAC 173-303-695 to detect conditions that could lead to the release of wastes from the HLW waste handling area containment building. The inspection and monitoring schedule and methods that will be used to detect a release are included in DWP Attachment 51, Chapter 6.

4.3 OTHER WASTE MANAGEMENT UNITS

Sections 4.3.1 through 4.3.5 discuss the applicability of the requirements for waste management units that have not been discussed up to this point in the ~~DWPA~~permit. Sections 4.3.6 through 4.3.9 describe the applicability of air emission controls, waste minimization, groundwater monitoring, and functional design requirements to the WTP. References to other sections of the ~~DWPA~~permit are provided as appropriate.

4.3.1 Waste Piles [D-3]

The operation of the WTP does not involve the placement of dangerous waste in waste piles. Therefore, the requirements of WAC 173-303-660, "Waste Piles", do not apply to the WTP.

4.3.2 Surface Impoundments [D-4]

The operation of the WTP does not involve the placement of dangerous waste in surface impoundments. Therefore, the requirements of WAC 173-303-650, "Surface Impoundments", do not apply to the WTP.

4.3.3 Incinerators [D-5]

The WTP does not include a dangerous waste incinerator. Therefore, the requirements of WAC 173-303-670, "Incinerators", do not apply to the WTP.

4.3.4 Landfills [D-6]

The operation of the WTP does not involve the placement of dangerous waste in landfills. Therefore, the requirements of WAC 173-303-665, "Landfills", do not apply to the WTP.

4.3.5 Land Treatment [D-7]

The operation of the WTP does not involve the land treatment of dangerous waste. Therefore, the requirements of WAC 173-303-655, "Land Treatment", do not apply to the WTP.

4.3.6 Air Emissions Control [D-8]

Information regarding air emissions control is provided in the following sections:

- Pretreatment plant vessel vent~~ilation system description~~ process and exhaust system (PVP/PVV) - section 4.1.2.17
- LAW vitrification offgas treatment system description - section 4.1.3.3
- HLW vitrification offgas treatment system description - section 4.1.4.3
- Process vents (40 CFR 264 Subpart AA) - section 4.2.2.10.2
- Equipment leaks (40 CFR 264 Subpart BB) - section 4.2.2.10.3
- Tanks and containers (40 CFR 264 Subpart CC) - section 4.2.2.10.4

4.3.7 Waste Minimization [D-9]

Waste minimization information is presented in Chapter 10 of the permit.

4.3.8 Groundwater Monitoring for Land-Based Units [D-10]

The groundwater monitoring requirements found in WAC 173-303-645, "Releases from regulated units", do not apply to the WTP, since it is not operated as a regulated dangerous waste surface impoundment, landfill, land treatment area or waste pile, as defined in WAC 173-303-040. Therefore, groundwater monitoring is not required.

4.3.9 Functional Design Requirements

The WTP will be designed to comply with applicable design codes and specifications. The ~~*Basis of Design* (BNI 2001) provides the design basis for the structure, systems, and components of the WTP~~documents referenced in this chapter and contained in DWP Attachment 51 identify the codes and standards to which the WTP system, structures, and components are being constructed.

Table 4-1 Example Piping Material Service Class Index

Table 4-1 has been deleted and superceded by *Piping Material Class Description*, 24590-WTP-PER-PL-02-001, (DWP, Attachment 51, Appendix 4).

~~Table 4-1 Example Piping Material Service Class Index~~

~~Class (Old)~~	~~Design Code/Service~~	~~Press/Temp Limits Psig @ °F~~	~~Flange Pressure Class~~	~~Corrosion/ Erosion Allow (in.)~~	~~Pipe~~	~~Large Fittings~~	~~Small Fittings~~	~~Valve Body~~	~~Valve Trim~~	~~Gasket~~
~~B19A (BB)~~	~~Uniform Plumbing Code~~ ~~(WV) Potable Water~~	~~Based on Design~~ ~~130 @ 200~~	~~CL 150~~ ~~B16.24~~	~~0.240~~	~~Copper 3/8" - 4", Type L~~	~~Cast Copper Alloy~~	~~Cast Copper Alloy~~	~~Cast Bronze/ Cast Iron~~	~~Bronze~~	~~Neoprene/ Red Rubber/ EPDM~~
~~C12A (CA)~~	~~ASME B31.3, Normal Fluid Service~~ ~~(GQ) Process Air~~ ~~(GK) 150 Psig Air~~ ~~(GN) Nitrogen~~ ~~(GA) Argon~~ ~~(WB) Cooling Water Supply~~ ~~(WC) Cooling Water Return~~ ~~(WK) Chilled Water Supply~~ ~~(WL) Chilled Water Return~~ ~~(ZA) Non-Dangerous, Non-Radioactive Liquid Effluent~~	~~Based on ASME B16.5~~ ~~285 @ -20/100~~ ~~200 @ 400~~	~~CL 150~~ ~~B16.5~~	~~0.0625~~	~~Carbon Steel 1/2" - 1 1/2", XS~~ ~~2" - 24", STD 30", STD~~	~~Carbon Steel~~	~~Carbon Steel~~	~~Carbon Steel~~	~~13CR-HFS~~	~~304 SS Spiral-Wound /ASME B16.20~~
~~C12B (CB)~~	~~ASME B31.3, Normal Fluid Service~~ ~~(DB), (DC), (DL) Steam~~ ~~(ZU) Non-Radioactive Condensate~~	~~Based on ASME B16.5~~ ~~285 @ -20/100~~ ~~200 @ 400~~	~~CL 150~~ ~~B16.5~~	~~0.0625~~	~~Carbon Steel 1/2" - 1 1/2", XS~~ ~~2" - 24", STD~~	~~Carbon Steel~~	~~Carbon Steel~~	~~Carbon Steel~~	~~13CR-HFS~~	~~304 SS Spiral-Wound /ASME B16.20~~

~~Table 4-1 Example Piping Material Service Class Index~~

~~Class (Old)~~	~~Design Code/Service~~	~~Press/Temp Limits Psig @ °F~~	~~Flange Pressure Class~~	~~Corrosion/ Erosion Allow (in.)~~	~~Pipe~~	~~Large Fittings~~	~~Small Fittings~~	~~Valve Body~~	~~Valve Trim~~	~~Gasket~~
~~C12D~~ ~~(CD)~~	~~ASME B31.3, Normal Fluid Service~~ ~~(XM) Fuel Oil~~ ~~(XK)Diesel Oil~~	~~Based on ASME B16.5~~ ~~285 @ 20/100~~ ~~260 @ 200~~	~~CL 150~~ ~~B16.5~~	~~0.0625~~	~~Carbon Steel 1/2" - 1 1/2", XS~~ ~~2" - 4", STD~~	~~Carbon Steel~~	~~Carbon Steel~~	~~Carbon Steel~~	~~13CR HF S~~	~~304 SS Spiral-Wound /ASME B16.20~~
~~C12E~~ ~~(CE)~~	~~NFPA 13~~ ~~(WF)Fire Protection, Aboveground~~	~~Based on Design~~ ~~175 @ 120~~	~~CL 150~~ ~~B16.5~~	~~0.1000~~	~~Carbon Steel.~~ ~~3/4" 1", Sch. 160~~ ~~1 1/2 2", XS 3" 20", STD~~	~~Carbon Steel~~	~~Malleable Iron~~	~~Cast Bronze~~ ~~Cast Iron~~	~~Bronze~~ ~~Ductile Iron~~	~~Neoprene~~
~~C12U~~ ~~(CU)~~	~~ASME B31.3, Normal Fluid Service~~ ~~(GK) Compressed Air, Underground~~ ~~(GQ) Ditto~~	~~Based on ASME B16.5~~ ~~285 @ 20/100~~ ~~200 @ 400~~	~~CL 150~~ ~~B16.5~~	~~0.0625~~	~~Carbon Steel, Externally Coated~~ ~~1/2" 1 1/2", XS~~ ~~2" 24" STD~~	~~Carbon Steel, Externally Coated~~	~~Carbon Steel, Externally Coated~~	~~Carbon Steel, Externally Coated~~	~~13CR HF~~	~~304 SS Spiral-Wound /ASME B16.20~~
~~C14A~~ ~~(CK)~~	~~ASME B31.3, Normal Fluid Service~~ ~~(WF)River Water~~ ~~(WP)Process Water~~	~~Based on ASME B16.5~~ ~~285 @ 20/100~~ ~~200 @ 400~~	~~CL 150~~ ~~B16.5~~	~~0.125~~	~~Carbon Steel~~ ~~1/2" 2", XS~~ ~~3" 24", STD~~	~~Carbon Steel~~	~~Carbon Steel~~	~~Carbon Steel~~	~~13CR HF S~~	~~304 SS Spiral-Wound /ASME B16.20~~

~~Table 4-1—Example Piping Material Service Class Index~~

~~Class (Old)~~	~~Design Code/Service~~	~~Press/Temp Limits Psig @ °F~~	~~Flange Pressure Class~~	~~Corrosion/ Erosion Allow (in.)~~	~~Pipe~~	~~Large Fittings~~	~~Small Fittings~~	~~Valve Body~~	~~Valve Trim~~	~~Gasket~~
~~CK1M (CM)~~	~~ASME B31.3, Normal Fluid Service~~ ~~(CH) High Pressure Air~~ ~~(CN) High Pressure Nitrogen~~	~~Based on Design~~ ~~4,000 @ 200~~	~~CL 2500~~ ~~B16.5~~	~~0.0312~~	~~Carbon Steel~~ ~~1/2"—6", XXS~~	~~Carbon Steel~~	~~Carbon Steel~~	~~Carbon Steel~~	~~13CR-HFS~~	~~Soft Iron RTJ/ ASME B16.20~~
~~CK2N (CN)~~	~~ASME B31.3, Normal Fluid Service~~ ~~(WQ) High Pressure Water, 3675 Psig~~	~~Based on Design~~ ~~3,675 @ 200~~	~~CL 2500~~ ~~B16.5~~	~~0.0625~~	~~Carbon Steel~~ ~~1/2"—6", XXS~~	~~Carbon Steel~~	~~Carbon Steel~~	~~Carbon Steel~~	~~13CR-HFS~~	~~Soft Iron RTJ/ ASME B16.20~~
~~F10A (FA)~~	~~ASME B31.3, Category M Fluid Service~~ ~~Radioactive, Dangerous Liquid Effluent Line~~	~~Based on Design~~ ~~150 @ 200~~	~~CL 150~~ ~~B16.5~~	~~0.000~~	~~Double Containment Fiberglass Reinforced Thermosetting Resin~~	~~Double Containment Fiberglass Reinforced Thermosetting Resin~~	~~Double Containment Fiberglass Reinforced Thermo-setting Resin~~	~~PVDF~~	~~EPDM/ Viton~~	~~EPDM/ Viton~~
~~G12A (CW)~~	~~Uniform Plumbing Code~~ ~~(WV)—Potable Water~~	~~Based on Design~~ ~~200 @ 150~~	~~CL 150~~ ~~B16.5~~	~~0.050~~	~~Carbon Steel, Galvanized~~ ~~1/2"—3", XS~~ ~~4"—12", STD~~	~~Ductile Iron, Galvanized~~	~~Malleable Iron, Galvanized~~	~~Cast Bronze/ Ductile Iron~~	~~Bronze~~	~~EPDM~~
~~H00A (JB)~~	~~Uniform Plumbing Code~~ ~~(WV)—Potable Water~~	~~Based on Design~~ ~~200 @ 150~~	~~TBD~~	~~0.000~~	~~Cement Mortar Lined Ductile Iron Pressure Pipe~~	~~Cement Mortar Lined Ductile Iron~~	~~None~~	~~None~~		~~Synthetic Rubber~~

~~Table 4-1 Example Piping Material Service Class Index~~

~~Class (Old)~~	~~Design Code/Service~~	~~Press/Temp Limits Psig @ °F~~	~~Flange Pressure Class~~	~~Corrosion/ Erosion Allow (in.)~~	~~Pipe~~	~~Large Fittings~~	~~Small Fittings~~	~~Valve Body~~	~~Valve Trim~~	~~Gasket~~
~~LE0A~~ ~~(JA)~~	~~NFPA 24~~ ~~(WF)Fire Protection, Underground~~	~~Based on Design~~ ~~175 @ Ambient~~	~~CL 125~~ ~~B16.1~~	~~0.000~~	~~Cement Mortar Lined Ductile Iron Pressure Pipe~~	~~Cement Mortar Lined Ductile Iron or Gray Iron~~	~~None~~	~~Cast Iron~~	~~Cast Iron/ Bronze~~	~~Rubber or Neoprene~~
~~N11E~~ ~~(TE)~~	~~ASME B31.3, Category M Fluid Service~~ ~~Highly Corrosive Process Fluids in High Active Cells~~	~~Based on Design~~ ~~110 @ 360~~	~~No Flanges~~	~~0.0312~~	~~Hastelloy C-276~~ ~~1/2" – 2", Sch. 40S~~ ~~3" – 8", Sch. 10S~~	~~Hastelloy C-276~~	~~Hastelloy C-276~~	~~No Valves~~	~~No Valves~~	~~No Gaskets~~
~~N11F~~ ~~(TF)~~	~~ASME B31.3, Category M Fluid Service~~ ~~(ZF) Plant Washings~~	~~Based on Design~~ ~~100 @ 200~~	~~TBD~~	~~0.0425~~	~~SS AL-6XN~~ ~~(UNS N08367)~~ ~~1/2" – 4", Sch. 40S~~ ~~6" – 24", Sch 10S~~ ~~30", Sch 10S~~	~~SS AL-6XN~~ ~~(UNS N08367)~~	~~SS AL-6XN~~ ~~(UNS N08367)~~	~~TBD~~	~~TBD~~	~~TBD~~
~~N13A~~	~~ASME B31.3, Category M Fluid Service~~ ~~TBD~~	~~Based on Design~~ ~~10 @ 600~~	~~TBD~~	~~0.093~~	~~Hastelloy C-22~~ ~~(UNS N06022)~~	~~Hastelloy C-22~~ ~~(UNS N06022)~~	~~TBD~~	~~TBD~~	~~TBD~~	~~TBD~~

~~Table 4-1 — Example Piping Material Service Class Index~~

~~Class (Old)~~	~~Design Code/Service~~	~~Press/Temp Limits Psig @ °F~~	~~Flange Pressure Class~~	~~Corrosion/ Erosion Allow (in.)~~	~~Pipe~~	~~Large Fittings~~	~~Small Fittings~~	~~Valve Body~~	~~Valve Trim~~	~~Gasket~~
~~N31C~~ ~~(TC)~~	~~ASME B31.3, Category M Fluid Service~~ ~~(TBD) In-Cell Process Piping~~ ~~(TBD) In-Cell Caustic Lines~~	~~Based on Design~~ ~~20 @ 520~~	~~None~~	~~0.0312~~	~~Inconel 600~~ ~~1/2" – 2", Sch. 40S~~ ~~3" – 6", Sch. 10S~~	~~Inconel 600~~	~~Inconel 600~~	~~No Valves~~	~~No Valves~~	~~No Gaskets~~
~~P10A~~ ~~(PA)~~	~~Uniform Plumbing Code~~ ~~(WB) Potable Water, Underground~~	~~Based on Design~~ ~~200 @ 73~~ ~~124 @ 100~~ ~~80 @ 120~~	~~TBD~~	~~0.000~~	~~PVC~~ ~~1" – 2", Sch. 80~~ ~~3" – 12", Pressure Class 200~~	~~PVC~~	~~PVC~~	~~1" – 2", Bronze~~ ~~3" – 12", Cast Iron/ Internally Coated~~	~~Bronze~~	~~Synthetic Rubber/ ASTM F477~~
~~P10C~~ ~~(PC)~~	~~ASME B31.3, Category D Fluid Service~~ ~~Underground Services:~~ ~~(WE) Demineralized Water~~ ~~(WR) River Water~~ ~~(WB) Cooling Water Supply~~ ~~(WC) Cooling Water Return~~ ~~(ZA) Non-Dangerous, Non-Radioactive Liquid Effluent~~ ~~(WK) Chilled Water Supply~~ ~~(WL) Chilled Water Return~~	~~Based on Design~~ ~~150 @ 0/100~~	~~CL 150~~ ~~B16.5~~	~~0.000~~	~~PVC~~ ~~12" & Smaller, Sch. 80~~	~~PVC~~	~~PVC~~	~~PVC~~	~~PVC/Viton~~	~~EPDM~~

~~Table 4-1 — Example Piping Material Service Class Index~~

~~Class (Old)~~	~~Design Code/Service~~	~~Press/Temp Limits Psig @ °F~~	~~Flange Pressure Class~~	~~Corrosion/ Erosion Allow (in.)~~	~~Pipe~~	~~Large Fittings~~	~~Small Fittings~~	~~Valve Body~~	~~Valve Trim~~	~~Gasket~~
~~P10E~~ ~~(PE)~~	~~ASME B31.3, Category D Fluid Service~~ ~~(WY) – Sewer~~	~~Based on Design~~ ~~150 @ 73~~ ~~60 @ 120~~	~~CL 150~~ ~~B16.5~~	~~0.000~~	~~PVC~~ ~~12” & Smaller, Sch. 40~~	~~PVC~~	~~PVC~~	~~PVC~~	~~PVC/ Viton~~	~~Neoprene~~
~~P10F~~ ~~(PF)~~	~~ASME B31.3, Category D Fluid Service~~ ~~(WY) – Sanitary Sewer Tile Drain~~	~~Gravity @ Ambient/120~~	~~CL 150~~ ~~B16.5~~	~~0.000~~	~~PVC~~ ~~4”, SDR 35~~	~~PVC~~	~~None~~	~~None~~	~~None~~	~~Neoprene~~
~~S10A~~ ~~(SA)~~	~~ASME B31.3, Category Normal Fluid Service~~ ~~(GL) Instrument Air~~	~~Based on ASME B16.5~~ ~~230 @ – 20/100~~ ~~195 @ 200~~	~~CL 150~~ ~~B16.5~~	~~0.000~~	~~304L SS~~ ~~1/2” – 2”, Sch. 40S~~ ~~3” – 24”, Sch. 10S~~	~~304L SS~~	~~304L SS~~	~~304L SS~~	~~316SS-HFS~~	~~316 SS Spiral-Wound /ASME B16.20~~
~~S11B~~ ~~(SB)~~	~~ASME B31.3, Category M Fluid Service~~ ~~In-Cell Piping with < 2% Solids (Process, Services, Reagents, and Vessel Vents)~~	~~Based on ASME B16.5, Class 150~~ ~~230 @ – 20/100~~ ~~166 @ 360~~	~~No Flanges~~	~~0.0312~~	~~316L SS~~ ~~1/2” – 2”, Sch. 40S~~ ~~3” – 24”, Sch. 10S~~	~~316L SS~~	~~316LSS~~	~~TBD~~	~~TBD~~	~~None~~

~~Table 4-1 Example Piping Material Service Class Index~~

~~Class (Old)~~	~~Design Code/Service~~	~~Press/Temp Limits Psig @ °F~~	~~Flange Pressure Class~~	~~Corrosion/ Erosion Allow (in.)~~	~~Pipe~~	~~Large Fittings~~	~~Small Fittings~~	~~Valve Body~~	~~Valve Trim~~	~~Gasket~~
~~S11C~~ ~~(SC)~~	~~ASME B31.3, Category Normal Fluid Service~~ ~~(ZS) Process Radioactive Condensate~~ ~~(ZR) Suspect Radioactive Condensate~~ ~~(WG) Re-circulated Emergency Cooling Suspect Radioactive~~ ~~(WS)Recirculated Cooling Suspect Radioactive~~ ~~(WE)Demineralized Water~~ ~~(WD) Inhibited Water~~ ~~(ZB) Biocides~~ ~~(ZC) Corrosion Inhibitors~~	~~Based on ASME B16.5~~ ~~230 @ -20/100~~ ~~166 @ 360~~	~~CL 150~~ ~~B16.5~~	~~0.0312~~	~~316L SS~~ ~~1/2" – 2", Sch. 40S~~ ~~3" – 14", Sch. 10S~~ ~~16" – 20, 0.250" nom.~~ ~~24" 0.312" nom.~~	~~316L SS~~	~~316L SS~~	~~316L SS~~	~~316SS-HFS~~	~~316 SS Spiral-Wound /ASME B16.20~~
~~S11F~~ ~~(SF)~~	~~ASME B31.3, Category M Fluid Service~~ ~~In-Cell Piping with < 2% Solids (Process, Services, Reagents, and Vessel Vents that Contain Nitric Acid)~~	~~Based on ASME B16.5, Class 150~~ ~~230 @ -20/100~~ ~~166 @ 360~~	~~No Flanges~~	~~0.0312~~	~~304L SS~~ ~~1/2" – 2", Sch. 40S~~ ~~3" – 24", Sch. 10S~~	~~304L SS~~	~~304L SS~~	~~TBD~~	~~TBD~~	~~None~~

~~Table 4-1 — Example Piping Material Service Class Index~~

~~Class (Old)~~	~~Design Code/Service~~	~~Press/Temp Limits Psig @ °F~~	~~Flange Pressure Class~~	~~Corrosion/ Erosion Allow (in.)~~	~~Pipe~~	~~Large Fittings~~	~~Small Fittings~~	~~Valve Body~~	~~Valve Trim~~	~~Gasket~~
~~S11G~~ ~~(SG)~~	~~ASME B31.3, Category Normal Fluid Service~~ ~~(XL) Lubricating Oil~~ ~~(XH) Hydraulic Oil~~ ~~(XJ) Transformer Oil~~	~~Based on ASME B16.5~~ ~~230 @ -20/100~~ ~~195 @ 200~~	~~CL 150~~ ~~B16.5~~	~~0.0312~~	~~304L SS~~ ~~1/2" – 2", Sch. 40S~~ ~~3" – 10", Sch 10S~~	~~304L SS~~	~~304L SS~~	~~304L SS~~	~~316SS-HFS~~	~~316 SS Spiral-Wound /ASME B16.20~~

~~Table 4-1 Example Piping Material Service Class Index~~

~~Class (Old)~~	~~Design Code/Service~~	~~Press/Temp Limits Psig @ °F~~	~~Flange Pressure Class~~	~~Corrosion/ Erosion Allow (in.)~~	~~Pipe~~	~~Large Fittings~~	~~Small Fittings~~	~~Valve Body~~	~~Valve Trim~~	~~Gasket~~
~~S11K~~ ~~(SK)~~	~~ASME B31.3, Category Norm Fluid Service~~ ~~(GM) Ammonia~~ ~~(RC) Calcium Nitrate~~ ~~(RL) Potassium Permanganate~~ ~~(RK) Sodium Permanganate~~ ~~(RQ) 1M Strontium Nitrite~~ ~~(PV) Strontium Carbonate~~ ~~Ammonium Hydroxide~~ ~~(RN) 0.5M Sodium Nitrite~~ ~~(JS) 0.5M Sodium Hydroxide~~ ~~(JS) 5M Sodium Hydroxide~~ ~~(ZK) Fresh Ion Exchange [IX] Resin~~ ~~(ZM) Off Specification Resin~~	~~Based on ASME B16.5~~ ~~230 @ 20/100~~	~~CL 150~~ ~~B16.5~~	~~0.0312~~	~~304L SS~~ ~~1/2" 2", Sch. 40S~~ ~~3" 14", Sch. 10S~~ ~~16" 20", 0.250" nom.~~ ~~24", 0.312" nom.~~	~~304L SS~~	~~304L SS~~	~~304L SS~~	~~316L SS HFS~~	~~316 SS Spiral-Wound /ASME B16.20~~

~~**Table 4-1 Example Piping Material Service Class Index**~~

~~**Class (Old)**~~	~~**Design Code/Service**~~	~~**Press/Temp Limits Psig @ °F**~~	~~**Flange Pressure Class**~~	~~**Corrosion/ Erosion Allow (in.)**~~	~~**Pipe**~~	~~**Large Fittings**~~	~~**Small Fittings**~~	~~**Valve Body**~~	~~**Valve Trim**~~	~~**Gasket**~~
~~S11M~~ ~~(SM)~~	~~ASME B31.3, Category M Fluid Service~~ ~~(GV)Radioactive Vessel Vent~~ ~~(PW)Radioactive Gas/Vapor~~ ~~(ZE) Plant Wash Solvent~~ ~~(ZF) Plant Washings~~ ~~(ZH) Acidic Effluents~~ ~~(ZJ) Alkaline Effluents~~ ~~(ZL) Spent Ion Exchange Resin~~ ~~(ZN) Neutralized Effluent~~ ~~(ZY) Scrubber Effluent~~	~~Based on ASME B16.5~~ ~~230 @ 20/100~~	~~CL 150~~ ~~B16.5~~	~~0.0312~~	~~316L SS~~ ~~1/2" - 2", Sch. 40S~~ ~~3" - 24", Sch. 10S~~	~~316L SS~~	~~316L SS~~	~~316L SS~~	~~316L SS-HFS~~	~~316 SS Spiral-Wound /ASME B16.20~~
~~S11P~~ ~~(TB)~~	~~ASME B31.3, Category M Fluid Service~~ ~~(ZT) Thermocouple Sheathed Line In Cell~~	~~Based on ASME B16.5~~ ~~230 @ 20/100~~	~~None~~	~~0.0312~~	~~316L SS~~ ~~1/2" - 3/4", Sch. 10S~~	None	~~No fitting, Use Type 316L Jointing Sleeve~~	~~No Valves~~	~~No Valves~~	~~No Gaskets~~

~~Table 4-1 — Example Piping Material Service Class Index~~

~~Class (Old)~~	~~Design Code/Service~~	~~Press/Temp Limits Psig @ °F~~	~~Flange Pressure Class~~	~~Corrosion/ Erosion Allow (in.)~~	~~Pipe~~	~~Large Fittings~~	~~Small Fittings~~	~~Valve Body~~	~~Valve Trim~~	~~Gasket~~
~~S11R (SR)~~	~~ASME B31.3, Category Norm Fluid Service~~ ~~(HN) — 0.5M Nitric Acid~~ ~~(HN) — 2M Nitric Acid~~ ~~(HN) — 5M Nitric Acid~~ ~~(HN) — 12.2M Nitric Acid~~ ~~(HR) — Recovered Nitric Acid~~ ~~(HT) — Citric Acid (SDG3)~~ ~~(GU) — Nitric Acid Fume~~	~~Based on ASME B16.5~~ ~~230 @ — 20/100~~	~~CL 150~~ ~~B16.5~~	~~0.0312~~	~~304L SS~~ ~~1/2" — 2", Sch. 40S~~ ~~3" — 14", Sch 10S~~ ~~16" — 20", 0.250" nom.~~ ~~24", 0312" nom.~~	~~304L SS~~	~~304L SS~~	~~304L SS~~	~~304L SS HFS~~	~~304SS Spiral-Wound /ASME B16.20~~
~~S11Y (SY)~~	~~ASME B31.3, Category M Fluid Service~~ ~~(ZG) Pneumercator Line~~ ~~(ZP) Pneumatic Sample Line~~ ~~(ZQ) Pneumatic Service Line~~	~~Based on ASME B16.5~~ ~~230 @ — 20/100~~	~~TBD~~	~~0.0312~~	~~316L SS~~ ~~1/2" — 3/4", Sch. 40S~~	~~None~~	~~316L SS~~	~~No Valves~~	~~No Valves~~	~~No Gaskets~~

~~Table 4-1 Example Piping Material Service Class Index~~										
~~Class (Old)~~	~~Design Code/Service~~	~~Press/Temp Limits Psig @ °F~~	~~Flange Pressure Class~~	~~Corrosion/ Erosion Allow (in.)~~	~~Pipe~~	~~Large Fittings~~	~~Small Fittings~~	~~Valve Body~~	~~Valve Trim~~	~~Gasket~~
~~S12A~~ ~~(LB)~~	~~ASME B31.3, Category M Fluid Service~~ ~~In-Cell Piping with ≥2% solids (Process, Services, Reagents, and Vessel Vents)~~	~~Based on ASME B16.5, Class 150~~ ~~230 @ -20/100~~ ~~166 @ 360~~	~~No Flanges~~	~~0.0625~~	~~316L SS~~ ~~1/2" - 2", Sch. 40S~~ ~~3" - 14", Sch. 10S~~ ~~16" - 24", 0250" nom.~~	~~316L SS~~	~~316L SS~~	~~TBD~~	~~TBD~~	~~None~~
~~S12C~~ ~~(LE)~~ ~~(>2% solids)~~	~~ASME B31.3, Category M Fluid Service~~ ~~(PA) Radioactive Aqueous~~ ~~(PX) Radioactive Slurry~~	~~Based on ASME B16.5~~ ~~230 @ -20/100~~	~~CL 150~~ ~~B16.5~~	~~0.0625~~	~~316L SS~~ ~~1/2" - 2", Sch. 40S~~ ~~3" - 14", Sch. 10S~~ ~~16" - 24", 0.250" nom.~~	~~316L SS~~	~~316L SS~~	~~316L SS~~	~~316L SS~~	~~316 SS Spiral-Wound /ASME B16.20~~
~~S12D~~ ~~(LF)~~	~~ASME B31.3, Category M Fluid Service~~ ~~In-Cell Piping with ≥ 2% Solids (Process, Services, Reagents, and Vessel Vents that Contain Nitric Acid)~~	~~Based on ASME B16.5, Class 150~~ ~~230 @ -20/100~~ ~~166 @ 360~~	~~No Flanges~~	~~0.0625~~	~~304L SS~~ ~~1/2" - 2", Sch. 40S~~ ~~3" - 14", Sch. 10S~~ ~~16" - 24", 0.250" nom.~~	~~304L SS~~	~~304L SS~~	~~TBD~~	~~TBD~~	~~None~~

~~Table 4-1 Example Piping Material Service Class Index~~										
~~Class (Old)~~	~~Design Code/Service~~	~~Press/Temp Limits Psig @ °F~~	~~Flange Pressure Class~~	~~Corrosion/ Erosion Allow (in.)~~	~~Pipe~~	~~Large Fittings~~	~~Small Fittings~~	~~Valve Body~~	~~Valve Trim~~	~~Gasket~~
~~S14D~~ ~~(TD)~~	~~ASME B31.3, Category M Fluid Service~~ ~~(FX) Mixed Glass Former~~ ~~Solids–high erosion~~	~~Based on ASME B16.5~~ ~~230 @ –20/100~~ ~~195 @ 200~~	~~CL 150~~ ~~B16.5~~	~~0.125~~	~~316L SS~~ ~~1/2" – 1", Sch. 160~~ ~~1 1/2" – 2", Sch. 80S~~ ~~3" – 12", Sch. 40S~~	~~316L SS~~	~~316L SS~~	~~316L SS~~	~~316L SS-HFS~~	~~316 SS Spiral-Wound /ASME B16.20~~
~~S30J~~ ~~(SJ)~~	~~ASME B31.3, Normal Fluid Service~~ ~~Liquid Carbon Dioxide~~	~~Based on Design~~ ~~300 @ –50~~	~~CL 300~~ ~~B16.5~~	~~0.000~~	~~304L SS~~ ~~1/2" – 2", Sch. 40S~~ ~~3" – 12, Sch. 10S~~	~~304L SS~~	~~304L SS~~	~~304L SS~~	~~(Later)~~	~~316 SS Spiral-Wound /ASME B16.20~~
~~S31H~~ ~~(SH)~~	~~ASME B31.3, Category M Fluid Service~~ ~~<2% Solids In-Cell Piping (Process and Vessel Vents)~~	~~Based on ASME B16.5~~ ~~600 @ –20/100~~ ~~505 @ 200~~	~~CL 300~~ ~~B16.5~~	~~0.0312~~	~~316L SS~~ ~~1/2" – 12", Sch. 40S~~	~~316L SS~~	~~316L SS~~	~~TBD~~	~~TBD~~	~~None~~
~~S31T~~ ~~(ST)~~	~~ASME B31.3, Category M Fluid Service~~ ~~Service Bulges, Process Bulges, Cabinets~~	~~Based on Design~~ ~~385 @ 400~~	~~CL 300~~ ~~B16.5~~	~~0.0312~~	~~316L SS~~ ~~1/2" – 12", Sch. 40S~~	~~316L SS~~	~~316L SS~~	~~316L SS~~	~~316L SS-HFS~~	~~316 SS Spiral-Wound /ASME B16.20~~
~~S31U~~ ~~(SU)~~	~~ASME B31.3, Category M Fluid Service~~ ~~< 2% Solids In-Cell Piping (Process, and Vessel Vents that Contain Nitric Acid))~~	~~Based on ASME B16.5~~ ~~600 @ –20/100~~ ~~505 @ 200~~	~~CL 300~~ ~~B16.5~~	~~0.0312~~	~~304L SS~~ ~~1/2" – 12", Sch. 40S~~	~~304L SS~~	~~304L SS~~	~~TBD~~	~~TBD~~	~~None~~

~~Table 4-1 Example Piping Material Service Class Index~~

~~Class (Old)~~	~~Design Code/Service~~	~~Press/Temp Limits Psig @ °F~~	~~Flange Pressure Class~~	~~Corrosion/ Erosion Allow (in.)~~	~~Pipe~~	~~Large Fittings~~	~~Small Fittings~~	~~Valve Body~~	~~Valve Trim~~	~~Gasket~~
~~S32A (LH)~~	~~ASME B31.3, Category M Fluid Service~~ ~~≥ 2% Solids In-Cell Piping (Process and Vessel Vents)~~	~~Based on ASME B16.5~~ ~~600 @ 20/100~~ ~~505 @ 200~~	~~CL 300~~ ~~B16.5~~	~~0.0625~~	~~316L SS~~ ~~1/2" – 12", Sch. 40S~~ ~~14", 0.375" nom.~~ ~~16" – 18", 0.437" nom.~~ ~~20", 0.500" nom.~~ ~~24", 0.562" nom.~~	~~316L SS~~	~~316L SS~~	~~TBD~~	~~TBD~~	~~None~~
~~S32B (LW) (≥ 2% Solids)~~	~~(PE) Entrained Solids Concentrate;~~ ~~(PJ) HLW Melter Feed;~~ ~~(PC) HLW Feed Slurry~~	~~Double Containment Pipe~~								
	~~INNER PIPE~~	~~ASME B31.3, Category M Fluid Service~~	~~Based on Design~~ ~~400 @ 160~~	~~TBD~~	~~0.0625~~	~~316L SS~~ ~~1/2" – 4", Sch. 40S~~	~~None – Use Bends for Directional Change~~	~~No Valves~~	~~No Valves~~	~~None~~
	~~OUTER PIPE~~	~~ASME B31.3, Category D Service Fluid~~	~~TBD~~	~~TBD~~	~~0.0000~~	~~316L SS~~ ~~4" – 8", Sch. 10S~~	~~Not Permitted Except Where Fitting Radius Equals Bend Radius~~	~~No Valves~~	~~No Valves~~	~~None~~

~~Table 4-1 — Example Piping Material Service Class Index~~

~~Class (Old)~~	~~Design Code/Service~~	~~Press/Temp Limits Psig @ °F~~	~~Flange Pressure Class~~	~~Corrosion/ Erosion Allow (in.)~~	~~Pipe~~	~~Large Fittings~~	~~Small Fittings~~	~~Valve Body~~	~~Valve Trim~~	~~Gasket~~
~~S62A~~ ~~(LU)~~	~~ASME B31.3, Category M Fluid Service~~ ~~≥ 2% Solids In-Cell Piping (Process and Vessel Vents that Contain Nitric Acid)~~	~~Based on ASME B16.5~~ ~~600 @ -20/100~~ ~~505 @ 200~~	~~CL 300~~ ~~B16.5~~	~~0.0625~~	~~304L SS~~ ~~1/2" – 12", Sch. 40S~~ ~~14", 0.375" nom.~~ ~~16" – 18", 0.437" nom.~~ ~~20", 0.500" nom.~~ ~~24", 0.562" nom.~~	~~304L SS~~	~~304L SS~~	~~TBD~~	~~TBD~~	~~None~~
~~SJ0E~~ ~~(SE)~~	~~ASME B31.3, Category Normal Fluid Service~~ ~~(GL) Instrument Air Back Up~~	~~Based on ASME B16.5~~ ~~3000 @ -20/100~~ ~~2530 @ 200~~	~~CL 1500~~ ~~B16.5~~	~~0.000~~	~~304L SS~~ ~~1/2" – 1", Sch. 80S~~ ~~1 1/2", 0.250" nom~~ ~~2", 0.312" nom.~~ ~~3", 0.437" nom.~~	~~304L SS~~	~~304L SS~~	~~304L SS~~	~~316SS-HF S~~	~~Soft Iron RTJ/ ASME B16.20~~
~~T11A~~ ~~(ZA)~~	~~ASME B31.3, Category M Fluid Service~~ ~~(HC) – Cerium De-contaminant~~ ~~(ZX) – Special De-contaminant~~	~~Based on Design~~ ~~120 @ 360~~	~~None~~	~~0.0312~~	~~Titanium~~ ~~(ASTM B337 Gr. 2)~~ ~~1/2" – 2", Sch. 40S~~ ~~3" – 6", Sch. 10S~~	~~Titanium~~	~~Titanium~~	~~No Valves~~	~~No Valves~~	~~None~~

~~**Table 4-1 Example Piping Material Service Class Index**~~

~~**Class (Old)**~~	~~**Design Code/Service**~~	~~**Press/Temp Limits Psig @ °F**~~	~~**Flange Pressure Class**~~	~~**Corrosion/ Erosion Allow (in.)**~~	~~**Pipe**~~	~~**Large Fittings**~~	~~**Small Fittings**~~	~~**Valve Body**~~	~~**Valve Trim**~~	~~**Gasket**~~
~~W31A (WA) (< 2% Solids)~~	~~Radioactive Effluent (LA Effluents/Process Fluids)~~ ~~(PF) Cs/Tc Concentrate/ Intermediate Product~~	~~Double Containment Pipe~~								
	~~INNER PIPE~~	~~ASME B31.3, Category M Fluid Service~~	Based on Design ~~400 @ 160~~	~~TBD~~	~~0.0312~~	~~316L SS~~ ~~1/2" 2", Sch. 40S~~ ~~3" 4", Sch. 10S~~	~~None - Use Bends for Directional Change~~	~~No Valves~~	~~No Valves~~	~~None~~
	~~OUTER PIPE~~	~~ASME B31.3, Category D Service Fluid~~	~~TBD~~	~~TBD~~	~~0.0000~~	~~316L SS~~ ~~4" 8", Sch. 10S~~	~~Not Permitted Except Where Elbow Radius Equals Bend Radius~~	~~No Valves~~	~~No Valves~~	~~None~~
~~W62F (XA)~~	~~DST Transfer Line~~	~~Double Containment~~ Pipe								
	~~INNER PIPE~~	~~ASME B31.3, Category M Fluid Service~~	Based on Design ~~1000 @ 160~~	None	~~0.0625~~	~~304L SS~~ ~~1/2" 4", Sch. 80S~~	~~None - Use Bends for Directional Change~~	~~No Valves~~	~~No Valves~~	~~None~~
	~~OUTER PIPE~~	~~ASME B31.3, Category D Fluid Service~~	~~TBD~~	~~TBD~~	~~0.0000~~	~~Carbon Steel, A106-B, Smls~~ ~~4" 8", STD~~	~~Not Permitted Except Where CS Fitting Radius Equals Bend Radius~~	~~No Valves~~	~~No Valves~~	~~None~~

Table 4-2 Container Storage Areas Summary

Container Storage Area	Maximum Waste Volume (US Gallons) [1]	Approximate Dimensions (L × W × H, in feet) [2]
~~**LAW Vitirfication Plant**~~		
~~ILAW Buffer Container Storage Area~~	~~89,099~~	~~22 x 63 x 20~~
~~ILAW Container Storage Area~~	~~889,448~~	~~(50 x 240 x 35) + (67 x 34 x 27)~~
~~LAW Container Storage Area~~	~~80,549~~	~~(21 x 33 x 25) + (28 x 20 x 25)~~
HLW Vitrification Plant		
IHLW Canister Storage Cave (H-0132)	162,589	63 × 23 × 15
HLW East Corridor El. 0' (HC-0108/09/10)	310,291	122 × 34 × 10
HLW Loading Area (H-0130)	159,185	56 × 38 × 10
~~IHLW Canister Storage Area~~	~~245,504~~	~~(67 x 23 x 27) + (37 x 34 x 27)~~
~~HLW Container Storage Area No. 1~~	~~266,654~~	~~122 x 34 x 37~~
~~HLW Container Storage Area No. 2~~	~~71,999~~	~~56 x 20 x 27~~
~~HLW Container Storage Area No. 3~~	~~43,392~~	~~45 x 15 x 37~~
Analytical Laboratory		
Laboratory Waste Management Area (A-0139 and A-0139A/B/C/D)	119,613	49× 39 × 10
Other Areas		
Non-Radioactive Dangerous Waste Container Storage Area (located on the Part A form, Fig 2A-3, Bldg 32)	~~48,214~~ 56,104	25 × 30 × 10

Table 4-2 Container Storage Areas Summary

Container Storage Area	Maximum Waste Volume (US Gallons) [1]	Approximate Dimensions (L × W × H, in feet) [2]
Failed Melter Storage Facility (located on the Part A form, Fig 2A-3, West of Bldg 11)	403,947	75 × 45 × 16
~~Central Waste Storage Facility~~	~~617,137~~	~~80 x 120 x 10~~
~~HLW Melter Out of Service Storage Area~~	~~202,498~~	~~70 x 45 x 35~~
~~LAW Melter Out of Service Storage area~~	~~216,962~~	~~45 x 75 x 35~~

[1] The conversion factor used to convert from cubic feet to gallons is 7.4805 gal/ft^3

[2] The dimension for height (H) is based on the height of the largest waste container stored in the area (i.e., LAW container is 7.5 ft, HLW canister is 15 ft, melters are assumed to be 16 ft, and a B-25 box is 5 ft - stacked a maximum of two high is 10 ft).

Table 4-3 Pretreatment Plant Tank Systems

No.	System	Vessel Number	Description	Material of Construction	Total Volume (US Gallons)	Approximate Dimensions (Diameter × Height or Length in feet)
1	FRP	FRP-VSL-00002A ~~V11020A~~	Waste Feed Receipt Vessel	Stainless Steel	474,000 ~~388,000~~	RESERVED ~~552 x 468~~
2	FRP	FRP-VSL-00002B ~~V11020B~~	Waste Feed Receipt Vessel	Stainless Steel	474,000	RESERVED ~~552 x 468~~
3	FRP	FRP-VSL-00002C ~~V11020C~~	Waste Feed Receipt Vessel	Stainless Steel	474,000	RESERVED ~~552 x 468~~
4	FRP	FRP-VSL-00002D ~~V11020D~~	Waste Feed Receipt Vessel	Stainless Steel	474,000	RESERVED ~~552 x 468~~
5	FEP	FEP-VSL-00017A ~~V11001A~~	Waste Feed Evaporator Feed Vessel	Stainless Steel	85,496 ~~59,070~~	RESERVED ~~264 x 336~~
6	FEP	FEP-VSL-00017B ~~V11001B~~	Waste Feed Evaporator Feed Vessel	Stainless Steel	85,496 ~~59,070~~	RESERVED ~~264 x 336~~
7	~~FEP~~	~~V11002A~~	~~Waste Feed Evaporator Separator Vessel~~	~~Stainless Steel~~	~~21,240~~	~~132 x 402~~
8	~~FEP~~	~~V11002B~~	~~Waste Feed Evaporator Separator Vessel~~	~~Stainless Steel~~	~~21,240~~	~~132 x 402~~
9	~~FEP~~	~~V11005~~	~~Evaporator Process Condensate Pot~~	~~Stainless Steel~~	~~1,190~~	~~60 x 116~~
10	FEP	FEP-VSL-00005	LAW Feed Evaporator Condensate Vessel	Stainless Steel	5,022	RESERVED
11	UFP	UFP-VSL-00062A ~~V12015A~~	~~LAW~~ Ultrafilter Permeate ~~Hold~~ Vessel	Stainless Steel	34,700 ~~28,390~~	RESERVED ~~180 x 317~~
12	UFP	UFP-VSL-00062B ~~V12015B~~	~~LAW~~ Ultrafilter Permeate ~~Hold~~ Vessel	Stainless Steel	34,700 ~~28,390~~	RESERVED ~~180 x 317~~
13	UFP	UFP-VSL-00062C ~~V12015C~~	~~LAW~~ Ultrafilter Permeate ~~Hold~~ Vessel	Stainless Steel	34,700 ~~28,390~~	RESERVED ~~180 x 317~~
14	~~UFP~~	~~V12021A~~	~~Evaporator Concentrate Buffer Vessel~~	~~Stainless Steel~~	~~62,340~~	~~240 x 397~~
15	~~UFP~~	~~V12021B~~	~~Evaporator Concentrate Buffer Vessel~~	~~Stainless Steel~~	~~62,340~~	~~240 x 397~~
16	UFP	UFP-VSL-00001A	Ultrafiltration Feed Preparation Vessel	Stainless Steel	75,593	RESERVED
17	UFP	UFP-VSL-00001B	Ultrafiltration Feed Preparation Vessel	Stainless Steel	75,593	RESERVED
18	UFP	UFP-VSL-00002A ~~V12011A~~	Ultrafiltration Feed Vessel	Stainless Steel	40,783 ~~28,840~~	RESERVED ~~240 x 397~~
19	UFP	UFP-VSL-00002B ~~V12011B~~	Ultrafiltration Feed Vessel	Stainless Steel	40,783 ~~28,840~~	RESERVED ~~240 x 397~~

Table 4-3 Pretreatment Plant Tank Systems

No.	System	Vessel Number	Description	Material of Construction	Total Volume (US Gallons)	Approximate Dimensions (Diameter × Height or Length in feet)
20	UFP	UFP-FILT-00001A ~~G12002A~~	Ultrafilter	Stainless Steel	140	RESERVED ~~17 x 145~~
21	UFP	UFP-FILT-00001B ~~G12002B~~	Ultrafilter	Stainless Steel	140	RESERVED ~~17 x 145~~
22	UFP	UFP-FILT-00002A ~~G12003A~~	Ultrafilter	Stainless Steel	140	RESERVED ~~17 x 145~~
23	UFP	UFP-FILT-00002B ~~G12003B~~	Ultrafilter	Stainless Steel	140	RESERVED ~~17 x 145~~
24	UFP	UFP-FILT-00003A ~~G12004A~~	Ultrafilter	Stainless Steel	140	RESERVED ~~17 x 145~~
25	UFP	UFP-FILT-00003B ~~G12004B~~	Ultrafilter	Stainless Steel	140	RESERVED ~~17 x 145~~
26	HLP	HLP-VSL-00028 ~~V12007~~	HLW Feed Blending Vessel	Stainless Steel	142,200 ~~18,070~~	RESERVED ~~144 x 304~~
27	~~HLP~~	~~V12001A~~	~~Strontium/transuranic Lag Storage Vessel~~	~~Stainless Steel~~	~~96,900~~	~~300 x 415~~
28	~~HLP~~	~~V12001B~~	~~Strontium/transuranic Lag Storage Vessel~~	~~Stainless Steel~~	~~96,900~~	~~300 x 415~~
29	~~HLP~~	~~V12001D~~	~~Lag Storage Vessel~~	~~Stainless Steel~~	~~96,900~~	~~300 x 415~~
30	~~HLP~~	~~V12001E~~	~~Lag Storage Vessel~~	~~Stainless Steel~~	~~96,900~~	~~300 x 415~~
31	HLP	HLP-VSL-00027A	HLW Lag Storage Vessel	Stainless Steel	127,260	RESERVED
32	HLP	HLP-VSL-00027B	HLW Lag Storage Vessel	Stainless Steel	127,260	RESERVED
33	HLP	HLP-VSL-00022	HLW Feed Receipt Vessel	Stainless Steel	270,600	RESERVED
34	CXP	CXP-IXC-00001 ~~C13001~~	Cesium Ion Exchange Column	Stainless Steel	680	RESERVED ~~42 x 126~~
35	CXP	CXP-IXC-00002 ~~C13002~~	Cesium Ion Exchange Column	Stainless Steel	680	RESERVED ~~42 x 126~~
36	CXP	CXP-IXC-00003 ~~C13003~~	Cesium Ion Exchange Column	Stainless Steel	680	RESERVED ~~42 x 126~~
37	CXP	CXP-IXC-00004 ~~C13004~~	Cesium Ion Exchange Column	Stainless Steel	680	RESERVED ~~42 x 126~~
38	~~CXP~~	~~V13073~~	~~LAW Feed Vessel~~	~~Stainless Steel~~	~~31,200~~	~~228 x 421~~
39	CXP	CXP-VSL-00001	Cesium Ion Exchange Feed Vessel	Stainless Steel	103,350	RESERVED
40	CXP	CXP-VSL-00004 ~~V13008~~	Cesium Ion Exchange Caustic Rinse Collection Vessel	Stainless Steel	11,085 ~~2,400~~	RESERVED ~~78 x 142~~
41	CXP	CXP-VSL-00005	Cesium Reagent Vessel	Stainless Steel	1,141	RESERVED
42	CXP	CXP-VSL-00026A	Cesium Ion Exchange Treated LAW Collection Vessel	Stainless Steel	39,000	RESERVED

Table 4-3 Pretreatment Plant Tank Systems

No.	System	Vessel Number	Description	Material of Construction	Total Volume (US Gallons)	Approximate Dimensions (Diameter × Height or Length in feet)
43	CXP	CXP-VSL-00026B	Cesium Ion Exchange Treated LAW Collection Vessel	Stainless Steel	39,000	RESERVED
44	CXP	CXP-VSL-00026C	Cesium Ion Exchange Treated LAW Collection Vessel	Stainless Steel	39,000	RESERVED
45	CNP	CNP-VSL-00003 ~~V13073~~	Eluate Contingency Storage Vessel	Stainless Steel	21,570 ~~11,060~~	RESERVED ~~138 x 216~~
46	CNP	CNP-VSL-00004 ~~V13028~~	Cesium Evaporator Recovered Nitric Acid Vessel	Stainless Steel	11,115 ~~5,410~~	RESERVED ~~96 x 204~~
47	CNP	CNP-VSL-00001	Cesium Evaporator Eluant Lute Pot	Stainless Steel	109	RESERVED
48	~~CNP~~	~~V13030~~	~~Cesium Concentrate Lute Pot~~	~~Stainless Steel~~	~~70~~	~~17 x 36~~
49	TXP	V43001	Technetium Ion Exchange Buffer Vessel	Stainless Steel	18,100	156 x 270
50	TXP	C43006	Technetium Ion Exchange Column	Stainless Steel	680	42 x 126
51	TXP	C43007	Technetium Ion Exchange Column	Stainless Steel	680	42 x 126
52	TXP	C43008	Technetium Ion Exchange Column	Stainless Steel	680	42 x 126
53	TXP	C43009	Technetium Ion Exchange Column	Stainless Steel	680	42 x 126
54	TXP	V43056	Caustic Rinse Collection Vessel	Stainless Steel	3,300	96 x 137
55	TXP	V43110A	Treated LAW Buffer Vessel	Stainless Steel	33,050	168 x 400
56	TXP	V43110B	Treated LAW Buffer Vessel	Stainless Steel	33,050	168 x 400
57	TXP	V43110C	Treated LAW Buffer Vessel	Stainless Steel	33,050	168 x 400
58	TEP	V43069	Technetium Eluant Recovery Evaporator	Stainless Steel	4,300	78 x 233
59	TEP	V43071	Recovered Technetium Eluant Vessel	Stainless Steel	7,900	114 x 216
60	TEP	V43072	Technetium Concentrate Lute Pot	Stainless Steel	70	17 x 36
61	TLP	TLP-VSL-00002	Treated LAW Evaporator Condensate Vessel	Stainless Steel	2,300	RESERVED
62	~~TLP~~	~~V41013~~	~~Process Condensate Hold Vessel~~	~~Stainless Steel~~	~~450~~	~~48 x 72~~
63	~~TLP~~	~~V41011~~	~~LAW Evaporator Separator Vessel~~	~~Stainless Steel~~	~~21,240~~	~~132 x 402~~
64	~~TLP~~	~~V45009A~~	~~Plant Wash Vessel~~	~~Stainless Steel~~	~~88,920~~	~~264 X 462~~
65	~~TLP~~	~~V45009B~~	~~Plant Wash Vessel~~	~~Stainless Steel~~	~~88,920~~	~~264 X 462~~
66	TLP	TLP-VSL-00009A	LAW SBS Condensate Receipt Vessel	Stainless Steel	130,010	RESERVED
67	TLP	TLP-VSL-00009B	LAW SBS Condensate Receipt Vessel	Stainless Steel	130,010	RESERVED
68	TCP	TCP-VSL-00001 ~~V41001~~	~~LAW Buffer~~ Treated LAW Concentrate Storage Vessel	Stainless Steel	146,740 ~~117,000~~	RESERVED ~~312 x 456~~

Table 4-3 Pretreatment Plant Tank Systems

No.	System	Vessel Number	Description	Material of Construction	Total Volume (US Gallons)	Approximate Dimensions (Diameter × Height or Length in feet)
69	RDP	RDP-VSL-00002A ~~V43135A~~	Spent Resin ~~Collection~~ Slurry Vessel	Stainless Steel	15,230 ~~8720~~	RESERVED ~~118 x 196~~
70	RDP	RDP-VSL-00002B ~~V43135B~~	Spent Resin ~~Collection~~ Slurry Vessel	Stainless Steel	15,230 ~~8720~~	RESERVED ~~118 x 196~~
71	RDP	RDP-VSL-00002C	Spent Resin Slurry Vessel	Stainless Steel	15,230	RESERVED
72	~~RDP~~	~~V43136~~	~~Resin Flush Collection Vessel~~	~~Stainless Steel~~	~~11,220~~	~~144 x 206~~
73	RDP	RDP-VSL-00004	Spent Resin Dewatering Moisture Separation Vessel	Stainless Steel	101	RESERVED
74	RLD	RLD-TK-00006A ~~V45028A~~	Process Condensate ~~Vessel~~ Tank	Stainless Steel	394,000 ~~321,720~~	RESERVED ~~480 x 492~~
75	RLD	RLD-TK-00006B ~~V45028B~~	Process Condensate ~~Vessel~~ Tank	Stainless Steel	394,000 ~~321,720~~	RESERVED ~~480 x 492~~
76	RLD	RLD-VSL-00017A	Alkaline Effluent Vessel	Stainless Steel	34,340	RESERVED
77	RLD	RLD-VSL-00017B	Alkaline Effluent Vessel	Stainless Steel	34,340	RESERVED
78	PWD	PWD-VSL-00033 ~~V15009B~~	Ultimate Overflow Vessel	Stainless Steel	41,650 ~~23,000~~	RESERVED ~~216 x 216~~
79	PWD	PWD-VSL-00043 ~~V12002~~	HLW Effluent Transfer Vessel	Stainless Steel	41,650 ~~23,000~~	RESERVED ~~216 x 216~~
80	~~PWD~~	~~V45013~~	~~Primary Acidic/Alkaline Effluent Vessel~~	~~Stainless Steel~~	~~49,850~~	~~216 x 385~~
81	~~PWD~~	~~V45018~~	~~Secondary Acidic/Alkaline Effluent Vessel~~	~~Stainless Steel~~	~~49,850~~	~~216 x 385~~
82	PWD	PWD-VSL-00015	Acid/Alkaline Effluent Vessel	Stainless Steel	119,150	RESERVED
83	PWD	PWD-VSL-00044 ~~V15009A~~	Plant Wash Vessel	Stainless Steel	103,024 ~~73,860~~	RESERVED ~~456 x 240~~
84	PWD	PWD-VSL-00046 ~~V15319~~	C3 Floor Drain Collection Vessel ~~Tank~~	Stainless Steel	4,982 ~~450~~	RESERVED ~~36 x 72~~
85	PWD	PWD-VSL-00016 ~~V15018~~	Acid/Alkaline Effluent Vessel	Stainless Steel	119,150 ~~93,180~~	RESERVED ~~264 x 480~~
86	PJV	PJV-VSL-00002	PJV Drain Collection Vessel	Stainless Steel	8,975	RESERVED
87	~~PVP~~	~~V15038~~	~~Vessel Vent Header Collection Vessel~~	~~Stainless Steel~~	~~900~~	~~54 x 108~~
88	~~PVP~~	~~V15038~~	~~Condensate Collection Vessel~~	~~Stainless Steel~~	~~1,230~~	~~60 x 120~~
89	PVP	PVP-VSL-00001 ~~V15326, V15327~~	Vessel Ventilation HEME Drain Collection Vessel	Stainless Steel	1,969 ~~820 & 2,760~~	RESERVED ~~48 x 120 72 x 180~~
90	PIH	PIH-TK-00001	Decontamination Soak Tank	Stainless Steel	TBD	TBD

Table 4-4 LAW Vitrification Plant Tank Systems

No.	System	Vessel Number	Description	Material	Total Volume (US Gallons)	Approximate Dimensions (Diameter × Height or Length in feet)
1	LCP	LCP-VSL-00001 ~~V21001~~	LAW Melter 1 Concentrate Receipt Vessel	Stainless Steel	18,130 ~~14,392~~	RESERVED ~~13 x 17~~
2	LCP	LCP-VSL-00002 ~~V21002~~	LAW Melter 2 Concentrate Receipt Vessel	Stainless Steel	18,130 ~~14,392~~	RESERVED ~~13 x 17~~
3	~~LCP~~	~~V21003~~	~~Melter 3 Concentrate Receipt Vessel~~	~~Stainless Steel~~	~~14,392~~	~~13 x 17~~
4	LFP	LFP-VSL-00001 V21101	Melter 1 Feed Preparation Vessel	Stainless Steel	9,123 ~~6,221~~	RESERVED ~~10 x 12~~
5	LFP	LFP-VSL-00002	Melter 1 Feed Vessel	Stainless Steel	9,123 ~~6,221~~	RESERVED ~~10 x 12~~
6	LFP	LFP-VSL-00003	Melter 2 Feed Preparation Vessel	Stainless Steel	9,123 ~~6,221~~	RESERVED ~~10 x 12~~
7	LFP	LFP-VSL-00004	Melter 2 Feed Vessel	Stainless Steel	9,123 ~~6,221~~	RESERVED ~~10 x 12~~
8	~~LFP~~	~~V21301~~	~~Melter 3 Preparation Vessel~~	~~Stainless Steel~~	~~6,221~~	~~10 x 12~~
9	~~LFP~~	~~V21302~~	~~Melter 3 Feed Vessel~~	~~Stainless Steel~~	~~6,221~~	~~10 x 12~~
10	LVP	LVP-TK-00001 ~~V22001~~	LAW Caustic ~~Scrubber Blowdown Vessel~~ Collection Tank	Stainless Steel	14,232 ~~12,191~~	RESERVED ~~14 x 14~~
11	LOP	LOP-VSL-00001 ~~V22101~~	LAW Melter 1 SBS Condensate Vessel	Hastelloy	9,056 ~~6,833~~	RESERVED ~~8 x 20~~
12	LOP	LOP-VSL-00002 ~~V22201~~	LAW Melter 2 SBS Condensate Vessel	Hastelloy	9,056 ~~6,833~~	RESERVED ~~8 x 20~~
13	~~LOP~~	~~V22301~~	~~Melter 3 SBS Condensate Vessel~~	~~Hastelloy~~	~~6,833~~	~~8 x 20~~
14	RLD	RLD-VSL-00003 ~~V25001~~	Plant Wash Vessel	Stainless Steel	25,780 ~~25,130~~	RESERVED ~~14 x 26~~
15	RLD	RLD-VSL-00004 ~~V25002~~	~~LAW~~ C3/C5 ~~Effluent~~ Drains/Sump Collection Vessel	Stainless Steel	7,696 ~~7,218~~	RESERVED ~~10 x 13~~
16	RLD	RLD-VSL-00005 ~~V25003~~	SBS Condensate Collection Vessel	Stainless Steel	25,780 ~~24,704~~	RESERVED ~~16 x 18~~

Table 4-5 HLW Vitrification Plant Tank Systems

No.	System	Vessel Number	Description	Material	Total Volume (US Gallons)	Approximate Dimensions (Diameter × Height in Length in feet)
1	~~HCP~~	~~V31001~~	~~Concentrate Receipt Vessel 1~~	~~Stainless Steel~~	~~17,900~~	~~14 × 18~~
2	~~HCP~~	~~V31002~~	~~Concentrate Receipt Vessel 2~~	~~Stainless Steel~~	~~17,900~~	~~14 × 18~~
3	~~HOP~~	~~V32101~~	~~SBS Condensate Collection Vessel~~	~~Hastelloy~~	~~10,000~~	~~12 × 14~~
4	HOP	HOP-VSL-00903	SBS Condensate Receiver Vessel No. 1	Hastelloy	9,891	RESERVED
5	HOP	HOP-VSL-00904	SBS Condensate Receiver Vessel No. 2	Hastelloy	9,891	RESERVED
6	HDH	HDH-VSL-00001 ~~V33004~~	Canister Rinse Bogie Decon~~tamination~~ Vessel	Stainless Steel	3,314 ~~2,500~~	RESERVED ~~5 x 17~~
7	HDH	HDH-VSL-00003 ~~V33002~~	Waste Neutralization Vessel	Stainless Steel	5,315 ~~5,300~~	RESERVED ~~7 x 20~~
8	~~HDH~~	~~V33001~~	~~Canister Decontamination Vessel~~	~~Titanium~~	~~580~~	~~3 × 16~~
9	HDH	HDH-VSL-00002	Canister Decon Vessel 1	Titanium	630	RESERVED
10	HDH	HDH-VSL-00004	Canister Decon Vessel 2	Titanium	630	RESERVED
11	RLD	RLD-VSL-00007 ~~V35002~~	Acidic Waste Vessel	Stainless Steel	18,145 ~~16,700~~	RESERVED
12	RLD	RLD-VSL-00008 ~~V35003~~	Plant Wash and Drains Vessel	Stainless Steel	13,774 ~~13,200~~	RESERVED
13	~~RLD~~	~~V35009~~	~~Decontamination Effluent Collection Vessel~~	~~Stainless Steel~~	~~7,300~~	~~10 × 14~~
14	RLD	RLD-VSL-00002 ~~V35038~~	Off-gas Drains Collection Vessel	Stainless Steel	366 ~~280~~	RESERVED
15	~~HFP~~	~~V31101~~	~~Feed Preparation Vessel~~	~~Stainless Steel~~	~~8,800~~	~~8 × 11~~
16	~~HFP~~	~~V31102~~	~~HLW Melter Feed Vessel~~	~~Stainless Steel~~	~~8,800~~	~~8 × 11~~
17	HFP	HFP-VSL-00001	HLW Melter 1 Feed Preparation Vessel	Stainless Steel	8,370	RESERVED
18	HFP	HFP-VSL-00002	HLW Melter 1 Feed Vessel	Stainless Steel	8,370	RESERVED
19	HFP	HFP-VSL-00005	HLW Melter 2 Feed Preparation Vessel	Stainless Steel	8,370	RESERVED
20	HFP	HFP-VSL-00006	HLW Melter 2 Feed Vessel	Stainless Steel	8,370	RESERVED
21	HSH	HSH-TK-00001	Decontamination Tank Melter Cave 1	Stainless Steel	3,718	RESERVED
22	HSH	HSH-TK-00002	Decontamination Tank Melter Cave 2	Stainless Steel	3,718	RESERVED

Table 4-6 Analytical Laboratory Tank Systems

No.	System	Vessel Number	Description	Material	Total Volume (US Gallons)	Approximate Dimensions (Diameter × Height or Length in feet)
1	~~LAB~~ RLD	~~V60001a~~ RLD-VSL-00164	~~Lab Liquid Effluent Collection Vessel~~ Laboratory Area Sink Drain Collection Vessel	~~Stainless Steel~~ 6% Mo	~~12,063~~ 3,180	~~11 x 14~~RESERVED
2	~~LAB~~ RLD	~~V60001b~~ RLD-VSL-00165	~~Lab Liquid Effluent Collection Vessel~~ Hot Cell Drain Collection Vessel	~~Stainless Steel~~ 6% Mo	~~12,063~~ 9,100	~~11 x 14~~RESERVED

Table 4-7 Analytical Laboratory Sumps

Table 4-7 was deleted and superceded by Sump Data for Lab Facility, 24590-LAB-PER-M-02-002 (DWP, Attachment 51, Appendix 11.5) Additional information is located in Permit Tables III.10.E.H and III.10.E.P.

~~Table 4-7 Analytical Laboratory Sumps~~

~~Description~~	~~Location~~	~~Sump Type~~
~~Lab Liquid Effluent Collection~~	~~Hot Cell~~	~~II~~

Table 4-8 Pretreatment Plant Sumps

Table 4-8 was deleted and superseded by Sump Data for PT Facility, 24590-PTF-PER-M-02-006 (DWP, Attachment 51, Appendix 8.5), Sump and Drain Data at 28 Ft Level of the PT Facility, and 24590-PTF-PER-M-03-002 Sump and Drain Data at the 56 ft. Level for the PT Facility, 24590-PTF-PER-M-04-002 (DWP, Attachment 51, Appendix 8.5). Additional information is located in Permit Tables III.10.E.E and III.10.E.J.

~~**Table 4-8 Pretreatment Plant Sumps**~~

~~Description~~	~~Location~~	~~Sump Type~~
~~Plant Wash~~	~~Pit~~	~~H~~
~~LAW Feed Receipt~~	~~PA-01~~	~~H~~
~~LAW Feed Receipt~~	~~PA-01~~	~~H~~
~~Effluent Collection~~	~~PA-08~~	~~H~~
~~Waste Feed~~	~~PA-09~~	~~H~~
~~Cesium Collection~~	~~PA-10~~	~~H~~
~~Technetium Collection~~	~~PA-10~~	~~H~~
~~Technetium Ion Exchange~~	~~PA-11~~	~~H~~
~~Technetium Ion Exchange~~	~~PA-11~~	~~H~~
~~Technetium Ion Exchange Columns~~	~~PA-12~~	~~H~~
~~Treated LAW Collection~~	~~PA-13~~	~~H~~
~~Plant Wash~~	~~PA-14~~	~~H~~
~~Plant Wash~~	~~PA-14~~	~~H~~
~~Hot Cell~~	~~PA-07~~	~~H~~

~~Table 4-8 Pretreatment Plant Sumps~~

~~Description~~	~~Location~~	~~Sump Type~~
~~Hot Cell~~	~~PA-07~~	~~H~~
~~Hot Cell~~	~~PA-07~~	~~H~~
~~Hot Cell~~	~~PA-07~~	~~H~~
~~Hot Cell~~	~~PA-07~~	~~H~~
~~Gross Decontamination~~	~~PA-15~~	~~H~~
~~Waste Feed Receipt~~	~~PA-02~~	~~H~~
~~Evaporator Feed~~	~~PA-03~~	~~H~~
~~Evaporator Feed~~	~~PA-03~~	~~H~~
~~Ultrafilter Feed~~	~~PA-04~~	~~H~~
~~Ultrafilter Feed~~	~~PA-04~~	~~H~~
~~Envelope D Receipt~~	~~PA-05~~	~~H~~
~~Envelope D Receipt~~	~~PA-05~~	~~H~~
~~Primary Decontamination~~	~~PA-16~~	~~H~~
~~Final Decontamination~~	~~PA-16~~	~~H~~

Table 4-9 LAW Vitrification Plant Sumps

Table 4-9 was deleted and superceded by LAW Facility Sump Data, 24590-LAW-PER-M-02-001 (DWP, Attachment 51, Appendix 9.5). Additional information is located in Permit Tables III.10.E.F and III.10.E.L.

~~Table 4-9 LAW Vitrification Plant Sumps~~

~~Description~~	~~Location~~	~~Sump Type~~
~~Melter 1 Pour Cave~~	~~L-062~~	~~I~~
~~Melter 2 Pour Cave~~	~~L-064~~	~~I~~
~~Melter 3 Pour Cave~~	~~L-066~~	~~I~~
~~C3/C5 Drains Vessel~~	~~L-007~~	~~I~~
~~C1/C2 Drains Tank~~	~~LC-001~~	~~I~~
~~Cooling Water Pump Room~~	~~L-015~~	~~I~~
~~C5 Filter Room~~	~~L-048~~	~~I~~
~~C5 Filter Room~~	~~L-048~~	~~I~~
~~Melter 1 Process Room~~	~~L-186~~	~~I~~
~~Melter 1 Process Room~~	~~L-186~~	~~I~~
~~Melter 2 Process Room~~	~~L-187~~	~~I~~
~~Melter 2 Process Room~~	~~L-187~~	~~I~~
~~Melter 3 Process Room~~	~~L-188~~	~~I~~
~~Melter 3 Process Room~~	~~L-188~~	~~I~~
~~Effluent Process Room~~	~~L-189~~	~~I~~

~~Table 4-9 LAW Vitrification Plant Sumps~~

~~Description~~	~~Location~~	~~Sump Type~~
~~Effluent Process Room~~	~~L-189~~	~~I~~

Table 4-10 HLW Vitrification Plant Sumps

Table 4-10 was deleted and superceded by HLW Facility Sump Data, 24590-HLW-PER-M-02-001 (DWP, Attachment 51, Appendix 10.5). Additional information is located in Permit Tables III.10.E.G and III.10.E.N

~~**Table 4-10 HLW Vitrification Plant Sumps**~~

~~**Description**~~	~~**Location**~~	~~**Sump Type**~~
~~Non-Active Effluent Collection Room~~	~~H-058~~	~~I~~
~~Canister Storage Transfer Tunnel~~	~~H-055~~	~~I~~
~~Cooling Water Plant Room~~	~~H-076~~	~~I~~
~~Process/Instrument Air Receiver Platform~~	~~HP-011A~~	~~I~~
~~Secondary Off-gas Cell~~	~~H-004~~	~~I~~
~~Drum Transfer Tunnel~~	~~H-068~~	~~I~~
~~Melter 1 Cave~~	~~H-153~~	~~II~~
~~Wet Process Cell~~	~~H-027~~	~~II~~
~~SBS Condensate Collection Cell~~	~~H-035~~	~~II~~
~~Decontamination Effluent Area~~	~~H-027~~	~~II~~
~~Canister Transfer Tunnel – Melter 2~~	~~H-022~~	~~I~~
~~Canister Transfer Tunnel – Melter 1~~	~~H-036~~	~~I~~
~~Bogie Decontamination Canister Rinse Tunnel~~	~~H-050~~	~~I~~
~~Canister Rinse Tunnel~~	~~H-051~~	~~I~~

~~Table 4-10 HLW Vitrification Plant Sumps~~

~~Description~~	~~Location~~	~~Sump Type~~
~~Filter Cave~~	~~H-133~~	~~I~~
~~Canister Import Tunnel~~	~~H-039~~	~~I~~
~~Bogie Maintenance~~	~~H-072~~	~~I~~
~~Canister Decontamination Cell~~	~~H-059~~	~~II~~
~~Consumables Drum Transfer Tunnel~~	~~H-028~~	~~I~~
~~Consumables Drum Transfer Tunnel~~	~~H-028~~	~~I~~
~~Cask Transfer Tunnel~~	~~H-073~~	~~I~~
~~Canister Handling Cave—Weld Area~~	~~H-146~~	~~I~~
~~Canister Handling Cave—Laydown Area~~	~~H-146~~	~~I~~

~~Table 4-11 Secondary Containment Liner in Cells and Caves in the WTP~~

~~Cell/Cave~~	~~Approximate Cell Dimensions (L×W, in feet)~~	~~Tanks in Cell/Cave~~	~~Volume of Largest Tank in Cell/Cave (gallons)~~	~~Calculated Secondary Containment Liner Height (feet)~~
~~Pretreatment Plant~~				
~~Ultimate Overflow Pit~~	~~22 × 54~~	~~V15009B, V12002~~	~~23,000~~	~~2.6~~
~~Waste Feed Receipt Cell~~	~~53 × 217 & 52 × 53~~	~~V11020A, V11020B, V11020C, V11020D~~	~~388,000~~	~~3.7~~
~~Waste Feed Evaporation Cell~~	~~52 × 78~~	~~V11001A, V11001B, V11002A, V11002B, V12015A, V12015B, V12010A~~	~~62,340~~	~~2.1~~
~~Waste Feed Ultrafiltration Cell~~	~~52 × 94~~	~~V12010B, V12015C, V12011A, V12011B, V15009A, V12007, V15052, V15038~~	~~73,860~~	~~2.1~~
~~HLW Feed Blending and Lag Storage Cell~~	~~52 × 132~~	~~V12001A, V12001C, V12001D, V12001E, V15326, V15327~~	~~96,900~~	~~1.9~~
~~Hot Cell~~	~~54 × 367~~	~~C13001, C13002, C13003, C13004, G12002A, G12002B, G12003A, G12003B, G12004A, G12004B~~	680	~~0.1~~
~~South Process Bulge~~	~~17 × 250~~	~~V11005~~	~~1,190~~	~~0.1~~
~~Northeast Process Bulge~~	~~17 x 250~~	~~V41013~~	450	~~0.1~~
~~Northwest Process Bulge~~	~~17 x 250~~	~~V15319~~	450	~~0.1~~
~~Effluent Vessel Cell~~	~~31 × 53~~	~~V15013, V15018~~	~~93,180~~	~~7.6~~

~~Table 4-11 Secondary Containment Liner in Cells and Caves in the WTP~~

~~Cell/Cave~~	~~Approximate Cell Dimensions (L×W, in feet)~~	~~Tanks in Cell/Cave~~	~~Volume of Largest Tank in Cell/Cave (gallons)~~	~~Calculated Secondary Containment Liner Height (feet)~~
~~Cesium Ion Exchange Removal Support Cell~~	~~36 × 42~~	~~V13001, V13073, V13008~~	~~61,200~~	~~5.4~~
~~Cesium Nitric Acid Recovery Cell~~	~~17 × 22~~	~~V13028, V13030~~	~~5,410~~	~~1.9~~
~~Technetium Eluant Recovery Cell~~	~~45 × 24~~	~~V43071, V43072~~	~~7,900~~	~~3.0~~
~~Spent Resin Collection Cell~~	~~17 × 24~~	~~V43135A~~	~~8,720~~	~~0.4~~
~~Technetium Ion Exchange Resin/Buffer Cell~~	~~24 × 34 & 15 × 27~~	~~V43135B, V43001, V43136~~	~~18,100~~	~~2.0~~
~~Technetium Ion Exchange Column Cell~~	~~34 × 42~~	~~C43006, C43007, C43008, C43009, V43056~~	~~3,300~~	~~0.4~~
~~Treated LAW Buffer Storage~~	~~34 × 60~~	~~V43110A, V43110B, V43110C, V41011~~	~~33,170~~	~~2.2~~
~~LAW Buffer Vessel Cell~~	~~34 × 117~~	~~V45009A, , V41001, V45013, V45018, V45009B~~	~~117,000~~	~~4.0~~
~~Analytical Laboratory~~				
~~Effluent Collection Cell~~	~~18 × 36~~	~~V60001a, V60001b~~	~~12,063~~	~~4.0~~
~~LAW Vitrification Plant~~				
~~L-186, Melter 1 Process Cell~~	~~48 × 38~~	~~V21001, V22101, V21102, V21101~~	~~14,392~~	~~1.4~~
~~L-187, Melter 2 Process Cell~~	~~48 × 38~~	~~V21002, V22201, V21202, V21201~~	~~14,392~~	~~1.4~~
~~L-188, Melter 3 Process Cell~~	~~48 × 38~~	~~V21002, V22301, V21302, V21301~~	~~14,392~~	~~1.4~~

~~Table 4-11 Secondary Containment Liner in Cells and Caves in the WTP~~

~~Cell/Cave~~	~~Approximate Cell Dimensions (L×W, in feet)~~	~~Tanks in Cell/Cave~~	~~Volume of Largest Tank in Cell/Cave (gallons)~~	~~Calculated Secondary Containment Liner Height (feet)~~
~~L-189, Effluent Cell~~	~~38 × 31~~	~~V25001, V25003~~	~~25,130~~	~~3.7~~
~~L-333, Caustic Scrub Blowdown Collection Room~~	~~31 × 27~~	~~V22001~~	~~12,191~~	~~3.3~~
~~L-007, C3/C5 Drain Tank Room~~	~~18 × 18~~	~~V25002~~	~~7,218~~	~~11.3~~
~~HLW Vitrification Plant~~				
~~H-153, No. 1 — Tank Area~~	~~51 × 12~~	~~V31001, V31002~~	~~8,800~~	~~3.0~~
~~H-050, Canister Bogie Decontamination Room~~	~~36 × 23~~	~~V33004~~	~~2,500~~	~~1.0~~
~~H-051, Canister Rinse Bogie Tunnel~~	~~11 × 54~~	~~V33004~~	~~2,500~~	~~1.0~~
~~H-059, Canister Decontamination Cell~~	~~11 × 22~~	~~V33001, V33002~~	~~5,300~~	~~4.0~~
~~H-035, SBS Drain Collection Cell No. 1~~	~~18 × 18~~	~~V32101~~	~~10,000~~	~~10.0~~
~~H-027, Wet Process Cell (south section)~~	~~18 × 64~~	~~V35002, V35003, V31001, V31002~~	~~16,700~~	~~4.5~~
~~H-027, Wet Process Cell (north section)~~	~~17 × 18~~	~~V35009, V35038~~	~~7,300~~	~~5.0~~

Table 4-11 Secondary Containment in Cells and Caves in the WTP

Cell/Cave	Approximate Cell Dimensions (L×W, in feet)	Miscellaneous Treatment Systems, Subsystems, or Tanks in Cell/Cave (Largest Plant Item in Bold Type)	Volume of Largest Plant Item in Cell/Cave (US Gallons)	Minimum Secondary Containment Height (feet)
Pretreatment Plant				
P-B005 C2/C3 Drain Tank Room	Minimum secondary containment for these cells/caves has been deleted and superceded by Flooding Volume for Below Grade and 0 Ft Level in PT Facility, 24590-PTF-PER-M-02-005 (DWP Attachment 51, Appendix 8.8)			
P-B002 HLW Drain Vessel Pit				
P-0102 HLW Receipt/Storage/Blending Cell				
P-0102A HLW Receipt/Storage/Blending Cell				
P-0104 Ultrafiltration Cell				
P-0106 Feed Evaporator/Ultrafiltration Cell				
P-0108 Feed Receipt Cell				
P-0108A Feed Receipt Cell				
P-0108B Feed Receipt Cell				
P-0108C Feed Receipt Cell				
P-0109 Acidic/Alkaline Effluent Collection Cell				
P-0111 Cesium Ion Exchange Cell				
P-0112 Cesium Eluant Collection Cell				
P-0117 Treated LAW Feed Cell				
P-0117A Treated LAW Feed Cell				
P-0118 Alkaline Effluent Collection Cell				
P-0123 Hot Cell				
P-0105, P-0105A, P-0105B, P-0105C Process Bulge Areas				

Table 4-11 Secondary Containment in Cells and Caves in the WTP

Cell/Cave	Approximate Cell Dimensions (L×W, in feet)	Miscellaneous Treatment Systems, Subsystems, or Tanks in Cell/Cave (Largest Plant Item in Bold Type)	Volume of Largest Plant Item in Cell/Cave (US Gallons)	Minimum Secondary Containment Height (feet)
Southeast, Southwest, and Northwest Process Bulge Areas: P-0201, P-0201A, P-0203, P-0203A, P-0203B, P-0204, P-0206, P-0207, P-0208, P-0209, P-0210, P-0212	Minimum secondary containment for these cells/caves has been deleted and superceded by Flooding Volume for 28 Ft Level in PT Facility, 24590-PTF-PER-M-03-001 (DWP Attachment 51, Appendix 8.8)			
P-0304 Waste Feed Evaporation Room	72 × 54	**FEP-SEP-00001A/B** FEP-DMST-00001A/B FEP-COND-00001A/1B/2A/2B/3A/3B	4,200	TBD
P-0320 Ion Exchange Evaporatorion Room	54 × 36	CNP-DISTC-00001 TEP-DISTC-00001	500	TBD
P-0325 Treated LAW Evaporator Room	54 × 36	**TLP-SEP-00001** TLP-COND-00001	4,200	TBD
P-0410 Utility Area Room	(90 × 36) + (36 × 18)	PWD-RK-00001/14/18/20 CXP-RK-00004 FRP-RK-00013 CNP-RK-00005 PWD-RK-00007/46 HPS-RK-00009 PWD-RK-00008 CXP-RK-00005/6/7 RDP-RK-00014/15	N/A	TBD
P-0415 Utility Area Room	54 × 54	PWD-RK-00005/09/12 TLP-RK-00005/6/7	N/A	TBD
P-0423 Utility Area Room	81 × 54	UFP-RK-00067/68/69/70/71/72/73 PWD-RK-00004/06/13/17/51 HLP-RK-00007/8/9	N/A	TBD
P-0425 Utility Area Room	54 × 54	PWD-RK-00002/03/11/19 FRP-RK-00012/14/19 FEP-RK-00004/5/6/7/8	N/A	TBD

Table 4-11 Secondary Containment in Cells and Caves in the WTP

Cell/Cave	**Approximate Cell Dimensions (L×W, in feet)**	**Miscellaneous Treatment Systems, Subsystems, or Tanks in Cell/Cave (Largest Plant Item in Bold Type)**	**Volume of Largest Plant Item in Cell/Cave (US Gallons)**	**Minimum Secondary Containment Height (feet)**
P-0430 Cesium Nitric Acid Recovery Condenser Room	45 × 36	CNP-HX-00002/3	TBD	TBD
Analytical Laboratory				
A-B003 Lab Area Sink Drain Collection Vessel Cell	Minimum secondary containment for these cells has been deleted and superceded by Flooding Volume for LAB Facility, 24590-LAB-PER-M-02-001 (DWP, Attachment 51, Appendix 11.8).			
A-B004 Hot Cell Drain Collection ,Vessel Cell				
LAW Vitrification Plant				
L-0123, Melter 1 Process Cell	Minimum secondary containment for these cells has been deleted and superceded by *Flooding Volume for LAW Facility*, 24590-LAW-PER-M-02-002			
L-0124, Melter 2 Process Cell				
L-0126, Effluent Cell				
L-B001B, C3/C5 Drains/Sump Collection Vessel Room				
L-0218, Caustic Scrub Blowdown Collection Berm	26 × 31	**LVP-VSL-00001**	14,579	TBD
HLW Vitrification Plant				
H-B014 Wet Process Cell North	Minimum secondary containment for these cells/caves has been deleted and superseded by Flooding Volume for HLW Facility, 24590-HLW-PER-M-02-003 (DWP, Attachment 51, Appendix 10.8).			
H-B014 Wet Process Cell South				
H-B021 SBS Drains Collection Cell No 1				
H-B035 Canister Decon Cave				
H-B039A, Canister Rinse-Bogie Maint Room				
H-B039B, Canister Rinse Tunnel				
H-0304A, Melter 2 Equipment Decontamination ~~Area~~ Pit				
H-0117, Melter Cave No. 1 (South)				
H-0117, Melter Cave No. 1 (West)				
H-0310A, Melter 1 Equipment Decontamination Pit				
H-106, Melter Cave No. 2 (South)				

Table 4-11 Secondary Containment in Cells and Caves in the WTP

Cell/Cave	Approximate Cell Dimensions (L×W, in feet)	Miscellaneous Treatment Systems, Subsystems, or Tanks in Cell/Cave (Largest Plant Item in Bold Type)	Volume of Largest Plant Item in Cell/Cave (US Gallons)	Minimum Secondary Containment Height (feet)
H-106, Melter Cave No. 2 (West)				
H-0302, Active Services Cell Melter 2				
H-0308, Active Services Cell Melter 1				
H-B005, SBS Drains Collection Cell No. 2				

~~Table 4-12 Containment Buildings Summary~~

~~Location~~	~~Approximate Dimensions (L × W × H, in feet)~~
~~Pretreatment Plant~~	
~~Pretreatment Hot Cell Containment Building~~	~~414 × 54 × 46~~
~~Pretreatment Maintenance Containment Building~~	~~(98 × 56 × 18) +~~ ~~(54 × 5 × 18) +~~ ~~(54 × 78 × 18) +~~ ~~(18 × 98 × 18)~~
~~Pretreatment Air Filtration Containment Building~~	~~234 × 54 × 19~~
~~LAW Vitrification Plant~~	
~~LAW LSM Gallery Containment Building~~	~~151 × 62 × 25~~
~~ILAW Container Finishing Containment Building~~	~~98 × 31 × 25~~
~~LAW Vitrification Plant C3 Workshop Containment Building~~	~~35 × 40 × 20~~

~~HLW Vitrification Plant~~	
~~HLW Melters No. 1 and 2 Containment Buildings~~	~~35 × 107 × 49~~
~~IHLW Container Weld Containment Building~~	~~140 × 18 × 48~~
~~IHLW Container Decontamination Building~~	~~10 × 80 × 58~~
~~HLW Vitrification Plant C3 Workshop Containment Building~~	~~(30 × 27 × 19) +~~ ~~(33 x 15 x 19)~~
~~HLW Air Filtration Containment Building~~	~~104 × 38 × 19~~
~~HLW Drum Transfer Tunnel Containment Building~~	~~220 × 10 × 10~~

Table 4-12 Containment Buildings Summary

Location	**Approximate Dimensions (L × W × H in feet)**
Pretreatment Plant	
P-0123 Pretreatment Hot Cell Containment Building	350 × 51 × 52
Pretreatment Maintenance Containment Building	
PM0124 Hot Cell Crane Maintenance Area	54 × 51× 52
P-0121A Spend Resin Dewatering	28 × 18 × 28
P-0122A Waste Packaging Area	26 × 51 × 28
P-0123A Remote Decontamination Maintenance Cave	55 × 51 × 28
P-0124 C3 Workshop	24 × 24 × 16
P-0124A C3 Workshop	(73 + 15 × 15) + (16 × 15 + 13)
P-0125 Filter Cask Airlock	24 × 20 × 28
P-0125A Filter Cask Area	28 × 18 × 28
P-0128A MSM Repair Area	24 × 18 × 28
P-0128 Temporary Storage Room	24 × 17 × 28
P-0223 Pretreatment Filter Package Maintenance Containment Building	40 × 20 × 28
P-0335 Pretreatment Air Filter Package Containment Building	118 × 54 × 42

Table 4-12 Containment Buildings Summary

Location	Approximate Dimensions (L × W × H in feet)
LAW Vitrification Plant	
L-0112 LAW LSM Gallery Containment Building	151 × 60 × 24
ILAW Container Finishing Containment Building	
L-0109B Swabbing Area Line 2	21 × 15 × 24
L-0109C Decontamination Area Line 2	18 × 15 × 24
L-0109D Inert Fill Area Line 2	55 × 15 × 24
L-0115B Swabbing Area Line 1	21 × 15 × 24
L-0115C Decontamination Area Line 1	18 × 15 × 24
L-0115D Inert Fill Area Line 1	55 × 15 × 24
L-109E Container Monitoring/Export Area	19 × 18 × 14
L-115E Container Monitoring/Export Area	19 × 18 × 14
L-0119B LAW Consumable Import/Export Containment Building	35 × 40 × 20
L-226A LAW C3 Workshop Containment Building	40 × 35 × 19
LAW Pour Cave Containment Building	
L-B015A Melter 1 Pour Cave	16.5 × 20
L-B013C Melter 1 Pour Cave	16.5 × 20
L-B013B Melter 2 Pour Cave	16.5 × 20
L-B011C Melter 2 Pour Cave	16.5 × 20
L-B011B Future Melter 3 Pour Cave	16.5 × 20
L-B009B Future Melter 3 Pour Cave	16.5 × 20
ILAW Buffer Container Containment Building	
L-B025C Container Buffer Store	22 x 22 x 7.5
L-B025D Container Rework	22 x 14 x 7.5
HLW Vitrification Plant	
H-0117, H-0116B, H-0310A HLW Melter Cave No. 1	145 × 35 × 55
H-0106, H-0105B, H-0304A HLW Melter Cave No. 2	145 × 35 × 55
H-0136 IHLW Canister Handling Cave Containment Building	140 × 18 × 48
H-B0133 IHLW Canister Swab and Monitoring Cave Containment Building	10 × 80 × 58

Table 4-12 Containment Buildings Summary

Location	Approximate Dimensions (L × W × H in feet)
H-0311A/B HLW Vitrification Plant C3 Workshop Containment Building	(30 × 27 × 19) + (33 × 15 × 19)
H-0104 HLW Filter Cave	104 × 38 × 19
H-B032 HLW Pour Tunnel No. 1 Containment Building	140 × 11 × 21
H-B005A HLW Pour Tunnel No. 2 Containment Building	140 × 11 × 21
H-0410B, H0411 HLW Waste Handling Area Containment Building	TBD
HLW Drum Swabbing and Monitoring Area	
H-0126A/B Swabbing and Monitoring Area	52 × 16 × 10
H-B028 Cask Transfer Tunnel	15 × 52 × 10

Table 4-13 Categorization of Piping

Table 4-13 has been deleted and superceded by 24590-WTP-PER-PS-02-001, *Ancillary Equipment Pipe Support Design* (DWP, Attachment 51, Appendix 7.5)

~~Table 4-13 Categorization of Piping~~

~~Seismic Category II – SC-II~~	~~Seismic Category III – SC-III~~	~~Seismic Category IV – SC-IV~~	
~~a Piping important to safety, whose failure during a seismic event could prevent a Seismic Category I piping components from performing its seismic safety function~~	~~a Piping important to safety, but without seismic safety function~~ ~~b Piping not important to safety, but which has an inventory of radioactive or hazardous material in an amount less than an important to safety significant quantity~~	~~a Piping not important to safety and without an inventory of radioactive or hazardous material, but require seismic protection.~~	
~~(I) Design Code and Analysis Methods for weight effects and thermal expansion or contraction effects~~			
~~ASME B31.3 Code(Ref 8.1)~~	~~ASME B31.3 Code (Ref 8.1)~~	~~ASME B31.3 Code (Ref 8.1)~~	~~ASME B31.3 Code (Ref 8.1)~~
~~(II) Analysis Methods for Seismic Loads~~			
~~NC~~ [b]	~~NC/F~~ [d]	~~NC/F~~ [d]	~~NC/F~~ [d]
~~NF~~ [e]	~~NF~~ [e]	~~F~~ [e]	~~F~~ [e]
~~Response Spectrum~~	~~Response Spectrum~~	~~UBC~~	~~UBC~~
~~(III) Acceptance Criteria~~			
~~NC [b]/B31.3~~	~~F~~ [e]	~~F~~ [e]	~~F~~ [e]
~~NF~~ [e]	~~NF~~ [e]	~~F~~ [e]	~~F~~ [e]

~~Notes:~~

[a] ~~Seismic Category V (SC-V) do not have any seismic design requirements. No analysis is required. The piping shall be installed per Building Code.~~

[b] ~~NC is defined as Section NC-3650 (Analysis of Nuclear Class 2 Piping Systems) of ASME Section III Code.~~

[c] ~~F is defined as Appendix F (Rules for Evaluation of Service Loadings with Level D service Limits (Faulted Condition)), as defined in ASME Section III Code.~~

[d] ~~NC/F is defined to apply Appendix F to meet ASME Section III, NC Code requirements.~~

[e] ~~NF is defined as Section NF (for Pipe Supports) of ASME Section III Code.~~

Table 4-14 WTP Facility Miscellaneous Treatment Systems and Sub-Systems

No.	System/ Subsystem	Component Number	Description	Material	Total Volume (US gallons)
Pretreatment Facility					
1	CNP	CNP-EVAP-00001	Separator Vessel	Hastelloy	NA
2	CNP	CNP-HX-00001	Cesium Evaporator Concentrate Reboiler	Stainless Steel	NA
3	CNP	CNP-DISTC-00001	Cesium Nitric Acid Rectifier Column	Stainless Steel	NA
4	CNP	CNP-HX-00002	Cesium Evaporator Primary Condenser	Stainless Steel	NA
5	CNP	CNP-HX-00003	Cesium Evaporator Inter-Condenser	Stainless Steel	NA
6	CNP	CNP-HX-00004	Cesium Evaporator After-Condenser	Stainless Steel	NA
7	FEP	FEP-SEP-00001A	Waste Feed Evaporator Separator Vessel	Stainless Steel	NA
8	FEP	FEP-SEP-00001B	Waste Feed Evaporator Separator Vessel	Stainless Steel	NA
9	FEP	FEP-RBLR-00001A	Reboiler	Stainless Steel	NA
10	FEP	FEP-RBLR-00001B	Reboiler	Stainless Steel	NA
11	FEP	FEP-COND-00001A	Primary Condenser	Stainless Steel	NA
12	FEP	FEP-COND-00001B	Primary Condenser	Stainless Steel	NA
13	FEP	FEP-COND-00002A	Inter-Condenser	Stainless Steel	NA
14	FEP	FEP-COND-00002B	Inter-Condenser	Stainless Steel	NA
15	FEP	FEP-COND-00003A	After-Condenser	Stainless Steel	NA
16	FEP	FEP-COND-00003B	After-Condenser	Stainless Steel	NA
17	PJV	PJV-HEPA-00001A	Primary HEPA Filter	Synthetic Fibrous Materials/Stainless Steel	NA
18	PJV	PJV-HEPA-00001B	Primary HEPA Filter	Synthetic Fibrous Materials/Stainless Steel	NA
19	PJV	PJV-HEPA-00001C	Primary HEPA Filter	Synthetic Fibrous Materials/Stainless Steel	NA
20	PJV	PJV-HEPA-00001D	Primary HEPA Filter	Synthetic Fibrous Materials/Stainless Steel	NA
21	PJV	PJV-HEPA-00001E	Primary HEPA Filter	Synthetic Fibrous Materials/Stainless Steel	NA
22	PJV	PJV-HEPA-00001F	Primary HEPA Filter	Synthetic Fibrous Materials/Stainless Steel	NA
23	PJV	PJV-HEPA-00001G	Primary HEPA Filter	Synthetic Fibrous Materials/Stainless Steel	NA
24	PJV	PJV-HEPA-00002A	Secondary HEPA Filter	Synthetic Fibrous Materials/Stainless Steel	NA
25	PJV	PJV-HEPA-00002B	Secondary HEPA Filter	Synthetic Fibrous Materials/Stainless Steel	NA
26	PJV	PJV-HEPA-00002C	Secondary HEPA Filter	Synthetic Fibrous Materials/Stainless Steel	NA
27	PJV	PJV-HEPA-00002D	Secondary HEPA Filter	Synthetic Fibrous Materials/Stainless Steel	NA
28	PJV	PJV-HEPA-00002E	Secondary HEPA Filter	Synthetic Fibrous Materials/Stainless Steel	NA
29	PJV	PJV-HEPA-00002F	Secondary HEPA Filter	Synthetic Fibrous Materials/Stainless Steel	NA
30	PJV	PJV-FAN-00001A	Exhaust Fan	Stainless Steel	NA
31	PJV	PJV-FAN-00001B	Exhaust Fan	Stainless Steel	NA
32	PJV	PJV-FAN-00001C	Exhaust Fan	Stainless Steel	NA

Table 4-14 WTP Facility Miscellaneous Treatment Systems and Sub-Systems

No.	System/ Subsystem	Component Number	Description	Material	Total Volume (US gallons)
33	PJV	PJV-DMST-00002A	Demister	Mesh Pad/ Stainless Steel	NA
34	PJV	PJV-DMST-00002B	Demister	Mesh Pad/ Stainless Steel	NA
35	PJV	PJV-DMST-00002C	Demister	Mesh Pad/ Stainless Steel	NA
36	PVP	PVP-ADBR-00001A	Carbon Bed Adsorber	TEDA/Stainless Steel	NA
37	PVP	PVP-ADBR-00001B	Carbon Bed Adsorber	TEDA/Stainless Steel	NA
38	PVP	PVP-CLR-00001	After-Cooler	Stainless Steel	NA
39	PVP	PVP-OXID-00001	VOC Oxidizer Unit	Stainless Steel	NA
40	PVP	PVP-FILT-00001A	Adsorber Outlet Filter	Synthetic Fibrous Materials/Stainless Steel	NA
41	PVP	PVP-FILT-00001B	Adsorber Outlet Filter	Synthetic Fibrous Materials/Stainless Steel	NA
42	PVP	PVP-HEME-00001A	HEME Filter	Packed Fiber Bed/Stainless Steel	NA
43	PVP	PVP-HEME-00001B	HEME Filter	Packed Fiber Bed/Stainless Steel	NA
44	PVP	PVP-HEME-00001C	HEME Filter	Packed Fiber Bed/Stainless Steel	NA
45	PVP	PVP-SCB-00002	Caustic Scrubber	Metal Intalox Packing/ Stainless Steel	3,237
46	PVV	PVV-HEPA-00001A/B	HEPA Filter- Primary		
47	PVV	PVV-HEPA-00002A/B	HEPA Filter- Secondary		
48	PVV	PVV-FAN-00001A/B	Exhaust Fans		
49	PVV		Stack and associated equipment		
50	TLP	TLP-SEP-00001	Treated LAW Evaporator Separator Vessel	Stainless Steel	NA
51	TLP	TLP-RBLR-00001	Reboiler	Stainless Steel	NA
52	TLP	TLP-COND-00001	Primary Condenser	Stainless Steel	NA
53	TLP	TLP-COND-00002	After-Condenser	Stainless Steel	NA
54	TLP	TLP-COND-00003	Inter-Condenser	Stainless Steel	NA
LAW Vitrification					
1	LOP	LOP-FCLR-00001	Melter 1 Primary Film Cooler	Stainless Steel	NA
2	LOP	LOP-FCLR-00002	Melter 1 Standby Film Cooler	Stainless Steel	NA
3	LOP	LOP-FCLR-00003	Melter 2 Primary Film Cooler	Stainless Steel	NA
4	LOP	LOP-FCLR-00004	Melter 2 Standby Film Cooler	Stainless Steel	NA
5	LOP	LOP-SCB-00001	Melter 1 Submerged Bed Scrubber	Ceramic Packing/Hastelloy	4,948
6	LOP	LOP-SCB-00002	Melter 2 Submerged Bed Scrubber	Ceramic Packing/Hastelloy	4,948
7	LOP	LOP-WESP-00001	Melter 1 Wet Electrostatic Precipitator	6% Molybdenum/Stainless Steel	6,347
8	LOP	LOP-WESP-00002	Melter 2 Wet Electrostatic Precipitator	6% Molybdenum/Stainless Steel	6,347
9	LMP	LMP-MLTR-00001	LAW Melter	Stainless Steel/Alloys	1,860
10	LMP	LMP-MLTR-00002	LAW Melter	Stainless Steel/Alloys	1,860

Table 4-14 WTP Facility Miscellaneous Treatment Systems and Sub-Systems

No.	**System/ Subsystem**	**Component Number**	**Description**	**Material**	**Total Volume (US gallons)**
11	LVP	LVP-SCB-00001	LAW Melter Offgas Caustic Scrubber	Metal Intalox Packing/Stainless Steel	~~3,237~~TBD
12	LVP	LVP-HEPA-00001A	HEPA Filter	Synthetic Fibrous Materials/Stainless Steel	NA
13	LVP	LVP-HEPA-00001B	HEPA Filter	Synthetic Fibrous Materials/Stainless Steel	NA
14	LVP	LVP-HEPA-00002A	HEPA Filter	Synthetic Fibrous Materials/Stainless Steel	NA
15	LVP	LVP-HEPA-00002B	HEPA Filter	Synthetic Fibrous Materials/Stainless Steel	NA
16	LVP	LVP-HEPA-00003A	HEPA Filter	Synthetic Fibrous Materials/Stainless Steel	NA
17	LVP	LVP-SCO-00001 (located on SKID-00002)	Selective Catalytic Oxidizer	Stainless Steel	NA
18	LVP	LVP-SCR-00001 (located on SKID-00002)	Selective Catalytic Reduction Unit	Stainless Steel	NA
19	LVP	LVP-HTR-00001A	Electric Heater	Stainless Steel	NA
20	LVP	LVP-HTR-00001B	Electric Heater	Stainless Steel	NA
21	LVP	LVP-HTR-00002 (located on SKID-00002)	Electric Heater	Stainless Steel	NA
22	LVP	LVP-HX-00001 (located on SKID-00002)	Heat Exchanger	Stainless Steel	NA
23	LVP	LVP-ADBR-00001A/B	Offgas Mercury ~~Carbon~~ Adsorber	Stainless Steel	NA
24	LVP	LVP-EXHR-00001A	Offgas Exhausters	Stainless Steel	NA
25	LVP	LVP-EXHR-00001B	Offgas Exhausters	Stainless Steel	NA
26	LVP	LVP-EXHR-00001C	Offgas Exhausters	Stainless Steel	NA
HLW Vitrification					
1	HMP	HMP-MLTR-00001	Melter 1	Stainless Steel/Alloys	1,078
2	HMP	HMP-MLTR-00002	Melter 2	Stainless Steel/Alloys	1,078
3	HOP	HOP-WESP-00001	Wet Electrostatic Precipitators	6% Molybdenum/ Stainless Steel	NA
4	HOP	HOP-WESP-00002	Wet Electrostatic Precipitators	6% Molybdenum/Stainless Steel	NA
5	HOP	HOP-SCO-00001	Offgas Organic Oxidizer	Stainless Steel	NA
6	HOP	HOP-SCO-00004	Offgas Organic Oxidizer	Stainless Steel	NA
7	HOP	HOP-SCR-00001	NOx Selective Catalytic Reducer	Stainless Steel	NA
8	HOP	HOP-SCR-00002	NOx Selective Catalytic Reducer	Stainless Steel	NA
9	HOP	HOP-ABS-00002	Silver Mordenite Column	Calcium Silicate/ Stainless Steel	NA
10	HOP	HOP-ABS-00003	Silver Mordenite Column	Calcium Silicate/ Stainless Steel	NA
11	HOP	HOP-FCLR-00001	Film Cooler	Stainless Steel	NA
12	HOP	HOP-FCLR-00002	Film Cooler	Stainless Steel	NA

Table 4-14 WTP Facility Miscellaneous Treatment Systems and Sub-Systems

No.	System/ Subsystem	Component Number	Description	Material	Total Volume (US gallons)
13	HOP	HOP-FCLR-00003	Film Cooler	Stainless Steel	NA
14	HOP	HOP-FCLR-00004	Film Cooler	Stainless Steel	NA
15	HOP	HOP-HEPA-00001A	HEPA Filter	Synthetic Fibrous Materials/Stainless Steel	NA
16	HOP	HOP-HEPA-00001B	HEPA Filter	Synthetic Fibrous Materials/Stainless Steel	NA
17	HOP	HOP-HEPA-00002A	HEPA Filter	Synthetic Fibrous Materials/Stainless Steel	NA
18	HOP	HOP-HEPA-00002B	HEPA Filter	Synthetic Fibrous Materials/Stainless Steel	NA
19	HOP	HOP-HEPA-00007A	HEPA Filter	Synthetic Fibrous Materials/Stainless Steel	NA
20	HOP	HOP-HEPA-00007B	HEPA Filter	Synthetic Fibrous Materials/Stainless Steel	NA
21	HOP	HOP-HEPA-00008A	HEPA Filter	Synthetic Fibrous Materials/Stainless Steel	NA
22	HOP	HOP-HEPA-00008B	HEPA Filter	Synthetic Fibrous Materials/Stainless Steel	NA
23	HOP	HOP-HTR-00001B	HEPA Electric Heater	Stainless Steel	NA
24	HOP	HOP-HTR-00002A	HEPA Electric Heater	Stainless Steel	NA
25	HOP	HOP-HTR-00005A	HEPA Electric Heater	Stainless Steel	NA
26	HOP	HOP-HTR-00005B	HEPA Electric Heater	Stainless Steel	NA
27	HOP	HOP-HX-00001	Heat Exchanger (Catalyst Skid Preheater)	Stainless Steel	NA
28	HOP	HOP-HX-00002	Heat Exchanger (Silver Mordenite Preheater)	Stainless Steel	NA
29	HOP	HOP-HX-00003	Heat Exchanger (Catalyst Skid Preheater)	Stainless Steel	NA
30	HOP	HOP-HX-00004	Heat Exchanger (Silver Mordenite Preheater)	Stainless Steel	NA
31	HOP	HOP-FAN-00001A	Booster Extraction Fans	Stainless Steel	NA
32	HOP	HOP-FAN-00001B	Booster Extraction Fans	Stainless Steel	NA
33	HOP	HOP-FAN-00001C	Booster Extraction Fans	Stainless Steel	NA
34	HOP	HOP-FAN-00008A	Stack Extraction Fans	Stainless Steel	NA
35	HOP	HOP-FAN-00008B	Stack Extraction Fans	Stainless Steel	NA
36	HOP	HOP-FAN-00008C	Stack Extraction Fans	Stainless Steel	NA
37	HOP	HOP-FAN-00009A	Booster Extraction Fans	Stainless Steel	NA
38	HOP	HOP-FAN-00009B	Booster Extraction Fans	Stainless Steel	NA
39	HOP	HOP-FAN-00009C	Booster Extraction Fans	Stainless Steel	NA
40	HOP	HOP-FAN-000010A	Stack Extraction Fans	Stainless Steel	NA
41	HOP	HOP-FAN-000010B	Stack Extraction Fans	Stainless Steel	NA
42	HOP	HOP-FAN-000010C	Stack Extraction Fans	Stainless Steel	NA
43	HOP	HOP-ADBR-00001A	Activated Carbon Column	Stainless Steel	NA
44	HOP	HOP-ADBR-00001B	Activated Carbon Column	Stainless Steel	NA
45	HOP	HOP-ADBR-00002A	Activated Carbon Column	Stainless Steel	NA

Table 4-14 WTP Facility Miscellaneous Treatment Systems and Sub-Systems

No.	System/ Subsystem	Component Number	Description	Material	Total Volume (US gallons)
46	HOP	HOP-ADBR-00002B	Activated Carbon Column	Stainless Steel	NA
47	HOP	HOP-HEME-00001A	HEME	Packed Fiber Bed/Stainless Steel	NA
48	HOP	HOP-HEME-00001B	HEME	Packed Fiber Bed/Stainless Steel	NA
49	HOP	HOP-HEME-00002A	HEME	Packed Fiber Bed/Stainless Steel	NA
50	HOP	HOP-HEME-00002B	HEME	Packed Fiber Bed/Stainless Steel	NA
51	HOP	HOP-SCB-00001	Submerged Bed Scrubber	Ceramic Packing/Alloy 22	4,516
52	HOP	HOP-SCB-00002	Submerged Bed Scrubber	Ceramic Packing/Alloy 22	4,516
53	HOP	HOP-HTR-00001	Catalyst Skid Electric Heater	Stainless Steel	NA
54	HOP	HOP-HTR-00007	Catalyst Skid Electric Heater	Stainless Steel	NA
55	PJV	PJV-HEPA-00004A	HEPA Filter	Synthetic Fibrous Materials/Stainless Steel	NA
56	PJV	PJV-HEPA-00004B	HEPA Filter	Synthetic Fibrous Materials/Stainless Steel	NA
57	PJV	PJV-HEPA-00005A	HEPA Filter	Synthetic Fibrous Materials/Stainless Steel	NA
58	PJV	PJV-HEPA-00005B	HEPA Filter	Synthetic Fibrous Materials/Stainless Steel	NA
59	PJV	PJV-HTR-00002	Electric Heater	Stainless Steel	NA
60	PJV	PJV-FAN-00002A	Pulse Jet Fans	Stainless Steel	NA
61	PJV	PJV-FAN-00002B	Pulse Jet Fans	Stainless Steel	NA

Appendix 4A

Figures and Drawings

This page intentionally left blank.

APPENDIX 4A

ENGINEERING FIGURES

The figures listed below are included in this appendix, and are to be used in conjunction with the text in the DWPA Chapter 4.

Title	Figure Number
Simplified Plant Flow Figures	
WTP Simplified Flow Diagram	4A -1
Primary Pretreatment Process Systems	4A -2
Primary Pretreatment Process Systems (Continued)	4A-02A
Primary LAW Vitrification Systems	4A -3
Primary HLW Vitrification Systems	4A -4
~~**Simplified Process Flow Figures**~~	
~~Waste Feed Receipt Process System (FRP)~~DELETED - Superseded by process flow diagram - 24590-PTF-M5-V17T-P0003	4A -5
~~Waste Feed Evaporation Process System (FEP~~)DELETED - Superseded by process flow diagram - 24590-PTF-M5-V17T-P0004001 and 24590-PTF-M5-V17T-P0004002	4A -6
~~Ultrafiltration Process System (UFP)~~DELETED - Superseded by process flow diagram - 24590-PTF-M5-V17T-P0009, 24590 PTF-M5-V17T-P0010, and 24590-PTF-M5-V17T-P0011	4A -7
~~HLW Lag Storage and Feed Blending Process System (HLP)~~DELETED - Superseded by process flow diagram - 24590-PTF-M5-V17T-P0007 and 24590-PTF-M5-V17T-P0008	4A -8
~~Cesium Ion Exchange Process System (CXP)~~DELETED - Superseded by process flow diagram - 24590-PTF-M5-V17T-P0012 and 24590-PTF-M5-V17T-P0013, 24590-PTF-M5-V17T-P0025	4A -9
~~Cesium Nitric Acid recovery Process System (CNP)~~DELETED - Superseded by process flow diagram - 24590-PTF-M5-V17T-P0014	4A -10
Cesium Resin Addition Process System (CRP)	4A -11
Technetium Ion Exchange Process System (TXP)	4A -12
Technetium Eluant Recovery Process System (TEP)	4A -13
Technetium Resin Addition Process System (TRP)	4A -14
~~Spent Resin and Dewatering Process System (RDP)~~DELETED - Superseded by process flow diagram - 24590-PTF-M5-V17T-P0020	4A -15
~~Treated LAW Evaporation Process System (TLP) and Treated LAW Concentrate Storage Process System (TCP)~~DELETED - Superseded by process flow diagram - 24590-PTF-M5-V17T-P0005 and 24590-PTF-M5-V17T-P0006	4A -16
~~Plant Wash and Disposal System (PWD)~~DELETED - Superseded by process flow diagram - 24590-PTF-M5-V17T-P0022001 and 24590-PTF-M5-V17T-P0022002	4A -17
~~Pretreatment Plant Radioactive Liquid Waste Disposal System (RLD) and Non-Radioactive Liquid Waste Disposal System (NLD)~~DELETED - Superseded by process flow diagram - 24590-PTF-M5-V17T-P0022003 and 24590-PTF-M5-V17T-P0022004	4A -18
~~Pretreatment Vessel Vent Process System (PVP)~~DELETED - Superseded by process flow diagram - 24590-PTF-M5-V17T-P0021001	4A -19
~~LAW Concentrate Receipt Process System (LCP) and Law Melter Feed Process System (LFP)~~DELETED - Superseded by process flow diagram - 24590-LAW-M5-V17T-P0001 and 24590-LAW-M5-V17T-P0002	4A -20

Title	Figure Number
LAW Melter Process System (LMP)	4A -21
~~LAW Primary Off-gas Process System (LOP)~~DELETED - Superseded by process flow diagram - 24590-LAW-M5-V17T-P0007 and 24590-LAW-M5-V17T-P0008	4A -22
~~LAW Secondary Off-gas/Vessel Vent Process System (LVP)~~DELETED - Superseded by process flow diagram - 24590-LAW-M5-V17T-P0010 and 24590-LAW-M5-V17T-P0011	4A -23
LAW Container Finishing Handling System (LFH)	4A -24
~~LAW Vitrification Plant Radioactive Liquid Waste Disposal System (RLD) and Non-Radioactive Liquid Waste Disposal System (NLD)~~DELETED-Superseded by process flow diagram -24590-LAW-M5-V17T-P0014	4A -25
~~HLW Cave Receipt Process System (HCP) and HLW Melter Feed Process System (HFP)~~DELETED - Superseded by process flow diagram - 24590-HLW-M5-V17T-P0001	4A -26
HLW Melter Process System (HMP)	4A -27
~~Melter Off-gas Treatment Process System (HOP) Primary System~~ DELETED-Superseded by process flow diagram -24590-HLW-M5-V17T-P0003	4A -28
~~Melter Off-gas Treatment Process System (HOP) Secondary System~~ DELETED - Superseded by process flow diagram - 24590-HLW-M5-V17T-P0003, 24590-HLW-M5-V17T-P0004, 24590-HLW-M5-V17T-P20003, and 24590-HLW-M5-V17T-P20004	4A -29
~~HLW Container Decontamination Handling System (HDH)~~DELETED - Superseded by process flow diagram - 24590-HLW-M5-V17T-P0006	4A -30
~~HLW Vitrification Plant Radioactive Liquid Waste Disposal System (RLD) and Non-Radioactive Liquid Waste Disposal System (NLD)~~DELETED - Superseded by process flow diagram - 24590-HLW-M5-V17T-P0007001 and 24590-HLW-M5-V17T-P0007002	4A -31
Typical System Figures	
~~Typical Tank System — Waste Feed Receipt Process System (FRP)~~DELETED - Superseded by mechanical assembly drawings 24590-PTF-M2-FRP-P0001, 24590-PTF-M2-FRP-P0002, 24590-PTF-M2-FRP-P0003, and 24590-PTF-M2-FRP-P0004	4A -32
~~Typical Tank System — Waste Feed Evaporation Process System (FEP)~~DELETED - Superseded by mechanical assembly drawings 24590-PTF-MV-FEP-P0001 and 24590-PTF-MV-FEP-P0002	4A -33
~~Typical Tank System — Ultrafiltration Process System (UFP)~~DELETED - Superseded by mechanical assembly drawings 24590-PTF-MV-UFP-P0001, 24590-PTF-MV-UFP-P0002, 24590-PTF-MV-UFP-P0003, 24590-PTF-MV-UFP-P0004, 24590-PTF-MV-UFP-P0005, and 24590-PTF-MV-UFP-P0006	4A -34
~~Typical Tank System — Ultrafilter~~ DELETED - Superseded by specification 24590-PTF-3PS-MLFP-TP001 (Attachment 51, Appendix 8.7) and mechanical data sheet 24590-PTF-MLD-UFP-P0007)	4A -35
~~Typical Tank System — Side Emptying Vessel — Cesium Ion Exchange Process System (CXP), Cesium Nitric Acid recovery Process System (CNP), Technetium Ion Exchange Process System (TXP), and Technetium Eluant Recovery Process System (TEP)~~DELETED - Superseded by mechanical assembly drawings 24590-PTF-MV-CXP-P0001, 24590-PTF-MV-CXP-P0003, and 24590-PTF-MV-CNP-P0005(Attachment 51, Appendix 8.6)	4A -36
~~Typical Tank System — Reverse Flow Diverter Emptying Vessel — Cesium Ion Exchange Process System (CXP), Cesium Nitric Acid recovery Process System (CNP), and Technetium Ion Exchange Process System (TXP)~~	4A -37

Title	Figure Number
DELETED - Superseded by mechanical assembly drawings 24590-PTF-MV-CNP-P0001, 24590-PTF-MV-CNP-P0002, 24590-PTF-MV-CXP-P0008, and 24590-PTF-MV-CXP-P0010 (Attachment 51, Appendix 8.6)	
Typical Tank System – Cesium Ion Exchange Column	4A -38
Typical Tank System – Technetium Ion Exchange Column	4A -39
~~Typical Tank System – Treated LAW Evaporation Process System (TLP)~~DELETED - Superseded by mechanical assembly drawings 24590-PTF-MV-TLP-P0001, and 24590-PTF-MV-TLP-P0002	4A -40
~~Typical Tank System – Treated LAW Concentrate Storage Process System (TCP)~~DELETED - Superseded by mechanical assembly drawings 24590-PTF-MV-TCP-P0002	4A -41
~~Typical Tank System – HLW Lag Storage and Feed Blending Process System (HLP)~~DELETED - Superseded by mechanical assembly drawings 24590-PTF-MV-HLP-P0003, 24590-PTF-MV-HLP-P0004, 24590-PTF-MV-HLP-P0005, and 24590-PTF-MV-HLP-P0006	4A -42
~~Typical Tank System – Spent Resin and Dewatering Process System (RDP)~~DELETED - Superseded by mechanical assembly drawings 24590-PTF-MV-RDP-P0001, 24590-PTF-MV-RDP-P0002, and 24590-PTF-MV-RDP-P0003	4A -43
~~Typical Tank System – Plant Wash and Disposal System (PWD)~~DELETED-Superseded by process flow diagram -24590-PTF-M5-V17T-P0022002	4A -44
~~Typical Tank System – Pretreatment Vessel Vent Process System (PVP)~~DELETED - Superseded by mechanical assembly drawing 24590-PTF-MV-PVP-P0002	4A -45
~~Typical Tank System – LAW Concentrate Receipt Process System (LCP)~~DELETED - Superseded by mechanical assembly drawings 24590-LAW-MV-LCP-P0001 and 24590-LAW-MV-LCP-P0002	4A -46
~~Typical Tank System – Law Melter Feed Process System (LFP)~~DELETED - Superseded by mechanical assembly drawings 24590-LAW-MV-LFP-P0001, 24590-LAW-MV-LFP-P0002, 24590-LAW-MV-LFP-P0004, and 24590-LAW-MV-LFP-P0005	4A -47
Typical ~~Tank~~ System – LAW Melter Process System (LMP)	4A -48
Typical Tank System – SBS Column Vessel, LAW Primary Off-gas Process System (LOP)	4A -49
~~Typical Tank System – SBS Condensate Vessel, LAW Primary Off-gas Process System (LOP)~~DELETED - Superseded by mechanical assembly drawings 24590-LAW-MV-LOP-P0001 and 24590-LAW-MV-LOP-P0002	4A -50
Typical Tank System – LAW Secondary Off-gas/Vessel Vent Process System (LVP)	4A -51
~~Typical Tank System – HLW Cave Receipt Process System (HCP)~~DELETED – Superseded by piping and instrumentation diagram 24590-HLW-M6-HCP-P0001 and 24590-HLW-M6-HCP-P0002	4A -52
Typical Tank System – HLW Melter Feed Process System (HFP)	4A -53
Typical Tank System – HLW Melter Process System (HMP)	4A -54
~~Typical Tank System – Melter Off-gas Treatment Process System (HOP)~~DELETED-Superseded by mechanical assembly drawing 24590-HLW-MV-HOP-P0001 and 24590-HLW-MV-HOP-P0003	4A -55
~~Typical Tank System – HLW Container Decontamination Handling System (HDH)~~DELETED - Superseded by mechanical assembly drawings 24590-HLW-MV-HDH-P0003, 24590-HLW-MV-HDH-P0004, 24590-HLW-MV-HDH-P0005, 24590-HLW-MV-HDH-P0006, 24590-	4A -56

Title	Figure Number
HLW-MV-HDH-P0007	
~~Typical Tank System – Radioactive Liquid Waste Disposal System (RLD)~~DELETED- Superseded by mechanical assembly drawing 24590-LAW-MV-RLD-P0001	4A -57
~~Typical Tank System – BOF Container Storage Area~~ RESERVED	4A -58
Typical Tank System – Containment Building	4A -59 (Sheet 1)
Typical System - Containment Building Typical Design Features Crosswalk	4A -59 (Sheet 2)
Simplified General Arrangement Figures	
~~Simplified General Arrangement Pretreatment – Plan at El. -41'~~DELETED- Superseded by general arrangement plan 24590-PTF-P1-P01T-P0006	4A -60
~~Simplified General Arrangement Pretreatment – Plan at El. 0'~~DELETED- Superseded by general arrangement plan 24590- PTF-P1-P01T-P0001	4A -61
~~Simplified General Arrangement Pretreatment – Plan at El. 28'~~DELETED- Superseded by general arrangement plan 24590- PTF-P1-P01T-P0002	4A -62
~~Simplified General Arrangement Pretreatment – Plan at El. 56'~~DELETED- Superseded by general arrangement plan 24590-PTF-P1-P01T-P0003	4A -63
~~Simplified General Arrangement Pretreatment – Plan at El. 77'~~DELETED- Superseded by general arrangement plan 24590-PTF-P1-P01T-P0004	4A -64
Simplified General Arrangement Pretreatment – Plan at El. 98'	4A -65
~~Simplified General Arrangement LAW – Plan at El. -21'~~DELETED- Superseded by general arrangement plan 24590-LAW-P1-P01T-P0001	4A -66
~~Simplified General Arrangement LAW – Plan at El. 3'~~DELETED- Superseded by general arrangement plan 24590-LAW-P1-P01T-P0002	4A -67
~~Simplified General Arrangement LAW – Plan at El. 22'~~DELETED- Superseded by general arrangement plan 24590-LAW-P1-P01T-P0003	4A -68
~~Simplified General Arrangement LAW – Plan at El. 28'~~DELETED- Superseded by general arrangement plan 24590-LAW-P1-P01T-P0004	4A -69
Simplified General Arrangement LAW – Plan at El. 48'	4A -70
~~Simplified General Arrangement HLW – Plan at El. -21'~~DELETED- Superseded by general arrangement plan -24590-HLW-P1-P01T-P0001	4A -71
~~Simplified General Arrangement HLW – Plan at El. 0'~~DELETED- Superseded by general arrangement plan -24590-HLW-P1-P01T-P0002	4A -72
~~Simplified General Arrangement HLW – Plan at El. 11'~~ RESERVED	4A -73
~~Simplified General Arrangement HLW – Plan at El. 30'~~DELETED- Superseded by general arrangement plan 24590-HLW-P1-P01T-P0004	4A -74
~~Simplified General Arrangement HLW – Plan at El. 49'~~DELETED- Superseded by general arrangement drawing 24590-HLW-P1-P01T-P0005	4A -75
~~Simplified General Arrangement HLW – Plan at El. 62' –~~ RESERVED	4A -76
Waste Management Area Figures	
~~Waste Management Areas Pretreatment – Plan at El. -41'~~DELETED- Superseded by general arrangement plan 24590-PTF-P1-P01T-P0006	4A -77
~~Waste Management Areas Pretreatment – Plan at El. 0'~~DELETED- Superseded by general arrangement plan 24590-PTF-P1-P01T-P0001	4A -78
~~Waste Management Areas Pretreatment – Plan at El. 28'~~DELETED- Superseded by general	4A -79

Title	Figure Number
arrangement plan 24590-PTF-P1-P01T-P0002	
~~Waste Management Areas Pretreatment Plan at El. 56'~~DELETED- Superseded by general arrangement drawing 24590-PTF-P1-P01T-P0003	4A -80
~~Waste Management Areas Pretreatment Plan at El. 77'~~DELETED- Superseded by general arrangement plan 24590-PTF-P1-P01T-P0004	4A -81
~~Waste Management Areas LAW Plan at El. -21'~~DELETED- Superseded by general arrangement plan–24590-LAW-P1-P01T-P0001	4A -82
~~Waste Management Areas LAW Plan at El. 3'~~DELETED- Superseded by general arrangement plan 24590-LAW-P1-P01T-P0002	4A -83
~~Waste Management Areas LAW Plan at El. 22'~~DELETED- Superseded by general arrangement plan 24590-LAW-P1-P01T-P0003	4A -84
~~Waste Management Areas LAW Plan at El. 28'~~DELETED- Superseded by general arrangement plan 24590-LAW-P1-P01T-P0004	4A -85
~~Waste Management Areas HLW Plan at El. -21'~~DELETED- Superseded by general arrangement plan 24590-HLW-P1-P01T-P0001	4A -86
~~Waste Management Areas HLW Plan at El. 0'~~DELETED- Superseded by general arrangement plan 24590-HLW-P1-P01T-P0002	4A -87
~~Waste Management Areas HLW Plan at El. 11'~~RESERVED	4A -88
~~Waste Management Areas HLW Plan at El. 30'~~DELETED- Superseded by general arrangement drawing 24590-HLW-P1-P01T-P0004	4A -89
Contamination/Radiation Area boundaries Figures	
DELETED ~~Contamination/Radiation Area Boundaries Pretreatment Plan at El. -41'~~	~~4A-90~~
DELETED ~~Contamination/Radiation Area Boundaries Pretreatment Plan at El. 0'~~	~~4A-91~~
DELETED ~~Contamination/Radiation Area Boundaries Pretreatment Plan at El. 28'~~	~~4A-92~~
DELETED ~~Contamination/Radiation Area Boundaries Pretreatment Plan at El. 56'~~	~~4A-93~~
DELETED ~~Contamination/Radiation Area Boundaries Pretreatment Plan at El. 77'~~	~~4A-94~~
DELETED ~~Contamination/Radiation Area Boundaries Pretreatment Plan at El. 98'~~	~~4A-95~~
DELETED ~~Contamination/Radiation Area Boundaries LAW Plan at El. -21'~~	~~4A-96~~
DELETED ~~Contamination/Radiation Area Boundaries LAW Plan at El. 3'~~	~~4A-97~~
DELETED ~~Contamination/Radiation Area Boundaries LAW Plan at El. 22'~~	~~4A-98~~
DELETED ~~Contamination/Radiation Area Boundaries LAW Plan at El. 28'~~	~~4A-99~~
DELETED ~~Contamination/Radiation Area Boundaries LAW Plan at El. 48'~~	~~4A-100~~
DELETED ~~Contamination/Radiation Area Boundaries HLW Plan at El. -21'~~	~~4A-101~~
DELETED ~~Contamination/Radiation Area Boundaries HLW Plan at El. 0'~~	~~4A-102~~
DELETED ~~Contamination/Radiation Area Boundaries HLW Plan at El. 11'~~	~~4A-103~~
DELETED ~~Contamination/Radiation Area Boundaries HLW Plan at El. 30'~~	~~4A-104~~
DELETED ~~Contamination/Radiation Area Boundaries HLW Plan at El. 49'~~	~~4A-105~~
DELETED ~~Contamination/Radiation Area Boundaries HLW Plan at El. 62'~~	~~4A-106~~
Analytical Laboratory Figures	
~~Analytical Laboratory Main Level General Arrangement~~ DELETED - Superseded by general arrangement plans 24590-LAB-P1-60-P0008 and 24590-LAB-P1-60-P0010	4A -107
~~Laboratory Second Floor General Arrangement~~ DELETED - Superseded by general arrangement plans 24590-LAB-P1-60-P0008 and 24590-LAB-P1-60-P0010	4A -108
~~Analytical Laboratory Hot Cell General Arrangement~~DELETED- Superseded by general arrangement plan drawings 24590-LAB-P1-60-P0008 and 24590-LAB-P1-60-P0010	4A -109

Title	Figure Number
(Attachment 51, Appendix 11.4)	
~~Analytical Laboratory Basement Level General Arrangement~~ DELETED - Superseded by general arrangement plans 24590-LAB-P1-60-P0007 and 24590-LAB-P1-60-P0010	4A -110
~~Analytical Laboratory Hot Cell Mechanical Systems~~ DELETED – Superseded by process flow diagram 24590-LAB-M5-V17T-P0029	4A -111
~~Analytical Laboratory Simplified Process Flow~~ DELETED – Superseded by process flow diagram 24590-LAB-M5-V17T-P0029	4A -112
~~Analytical Laboratory Tank System~~ DELETED – Superseded by process flow diagram 24590-LAB-M5-V17T-P0029	4A -113
~~Analytical Laboratory Main Floor Ventilation~~ RESERVED	4A -114
~~Analytical Laboratory Second Floor Ventilation~~ DELETED	4A -115
Analytical Laboratory ~~Hot Cell Ventilation~~ DELETED	4A -116
~~Analytical Laboratory Basement Level Ventilation~~ DELETED	4A -117
Miscellaneous Figures	
Schematic of an Example IHLW Container and Label	4A -118
Schematic of an Example ILAW Container and Label	4A -119
Typical Arrangement of a Reverse Flow Diverter	4A -120
Basic Reverse Flow Diverter Design	4A -121
Typical Arrangement of a Steam Ejector System	4A -122
Typical Seal Pot Arrangement	4A -123
Typical Breakpot Arrangement	4A -124
~~Typical Type 1 Sump~~ DELETED - Superseded by: 24590-WTP-PER-CSA-02-001, *Secondary Containment Design* 24590-PTF-PER-M-02-006, *Sump Data for PT Facility* 24590-PTF-PER-M-03-002, *Sump and Drain Data at 28 Ft Level for PT Facility* 24590-PTF-PER-M-04-002, *Sump and Drain Data at 56 Ft Level for PT Facility* 24590-PTF-PER-M-04-0004, *Sump and Drain Data at 77 Ft Level for PT Facility* 24590-LAW-PER-M-02-001, *LAW Facility Sump Data* 24590-HLW-PER-M-02-001, *HLW Facility Sump Data* 24590-LAB-PER-M-02-002, *Sump Data for LAB Facility*	4A -125
~~Typical Type II Sump~~ DELETED- the WTP will not contain wet (Type II) sumps	~~4A -126~~
Typical Bulge Configuration	4A -127

Figure 4A-1 WTP Simplified Flow Diagram

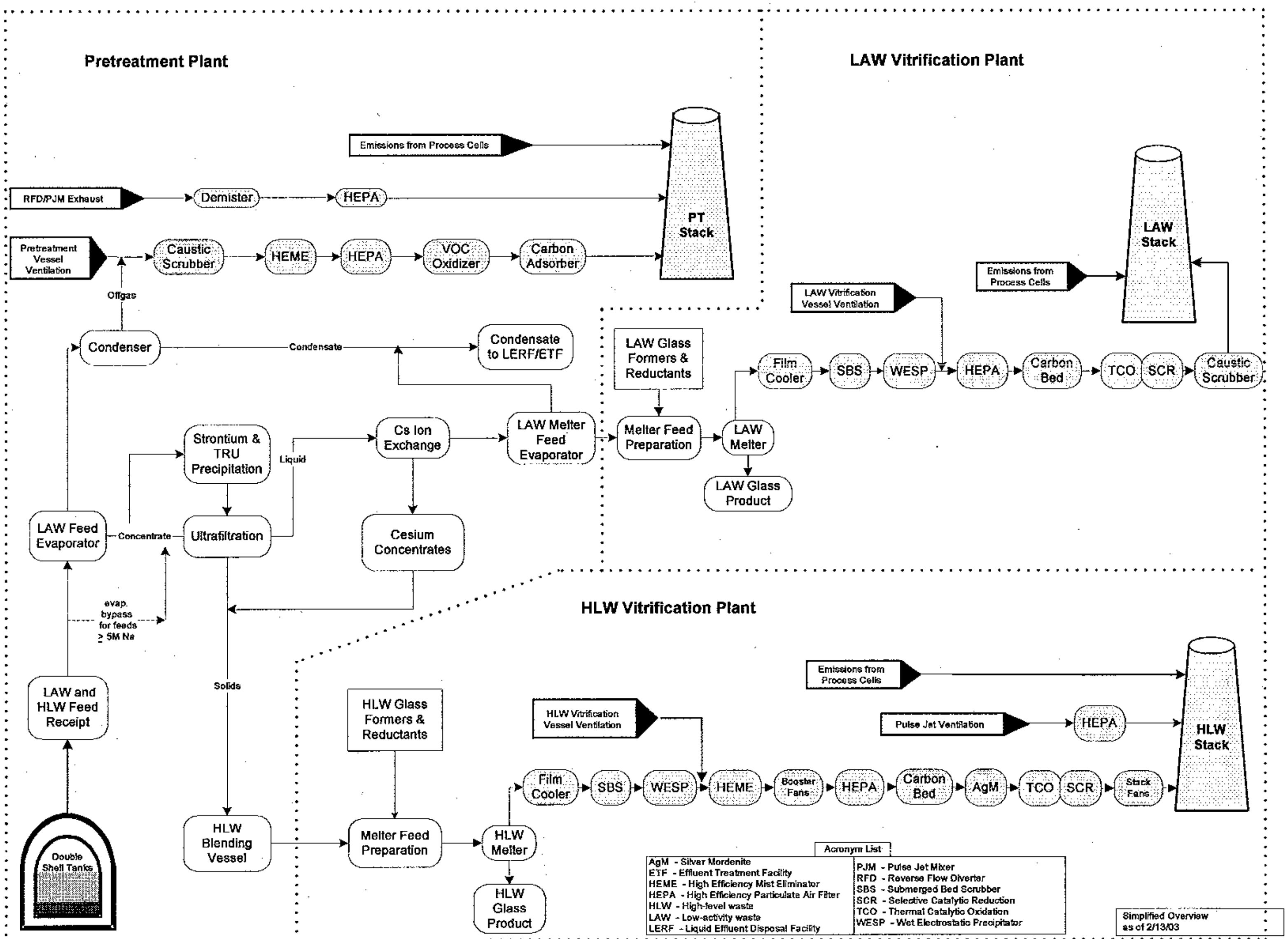


Figure 4A-2 Primary Pretreatment Process Systems

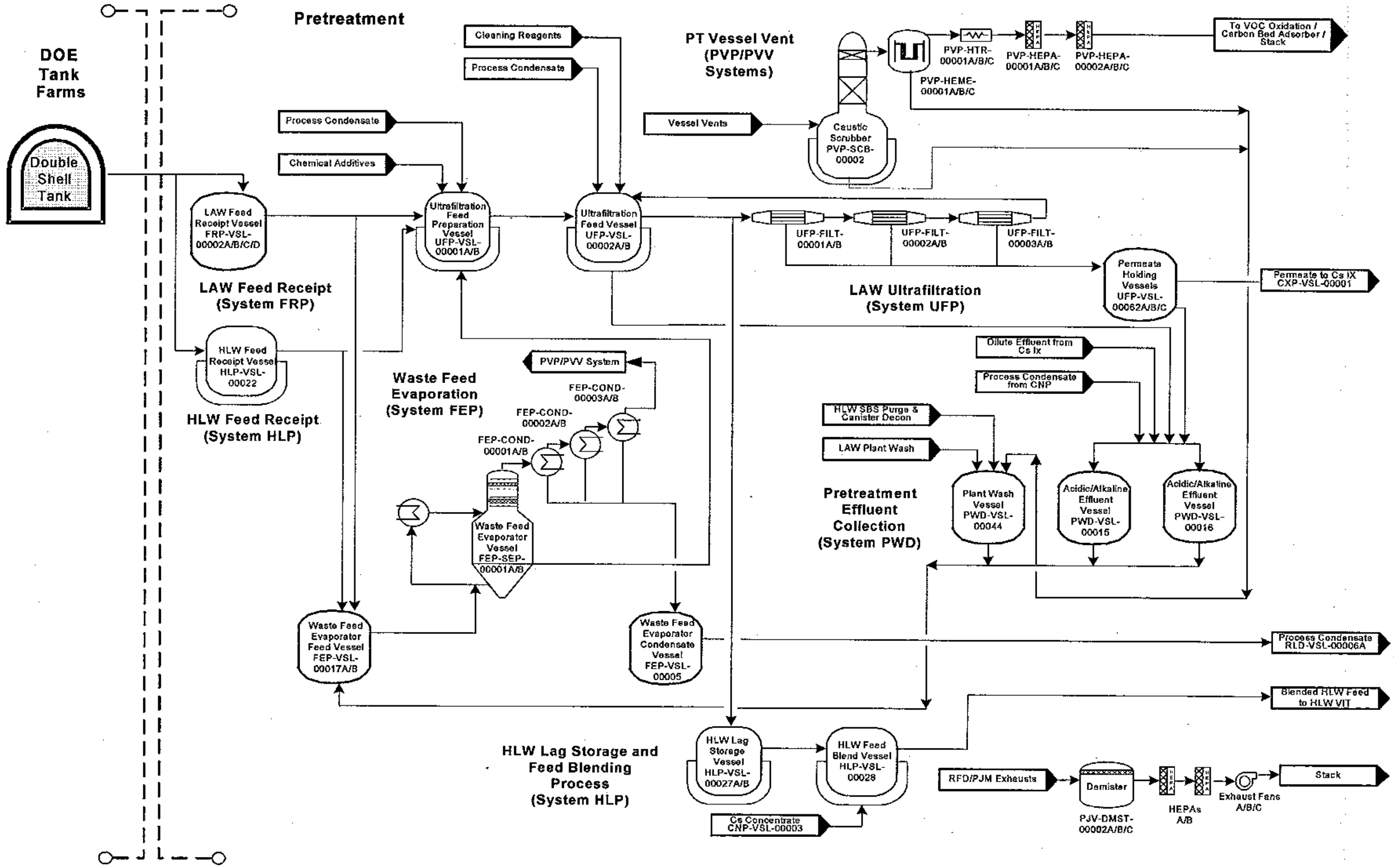


Figure 4A-02A Primary Pretreatment Process Systems (Continued)

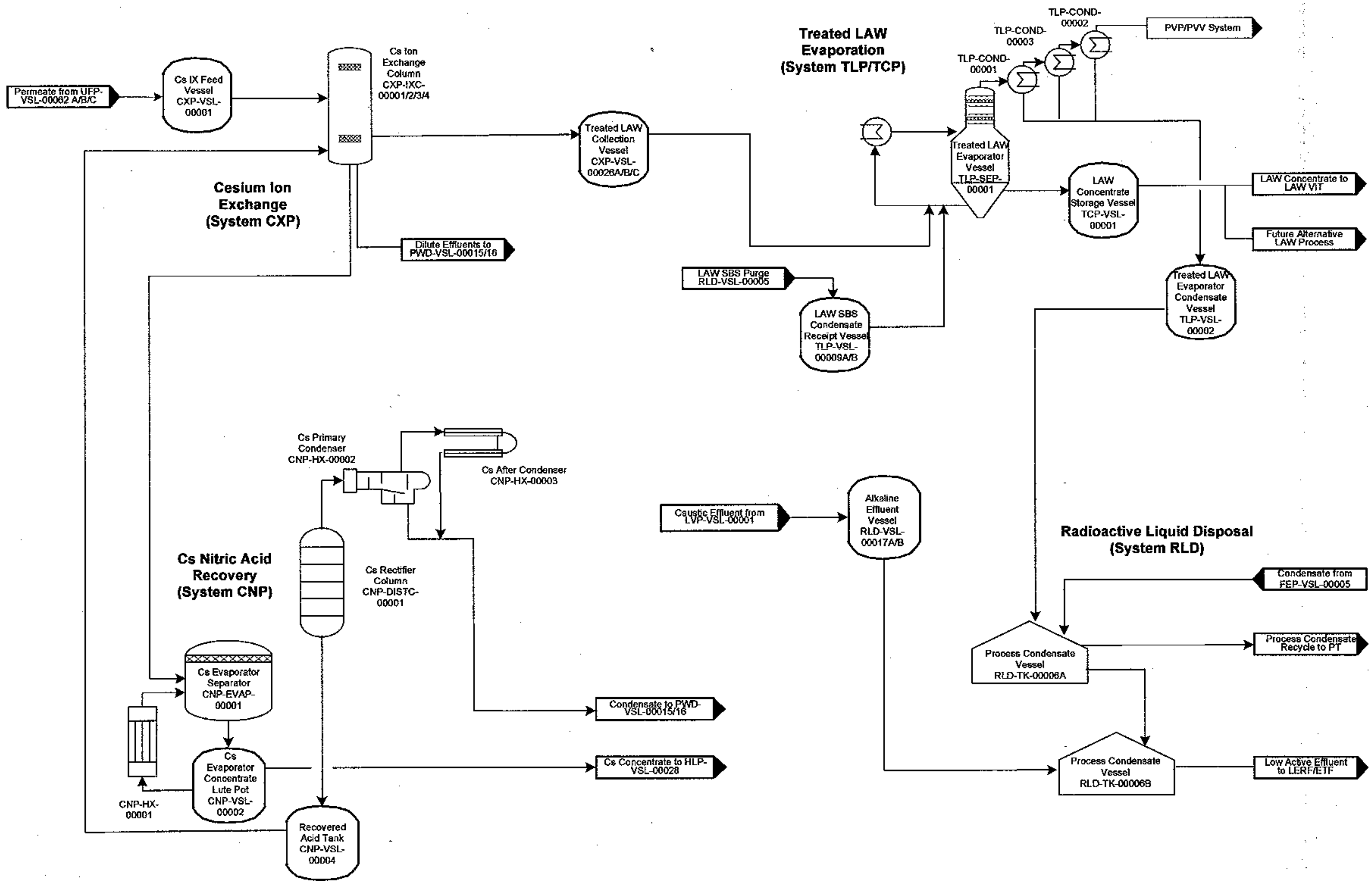
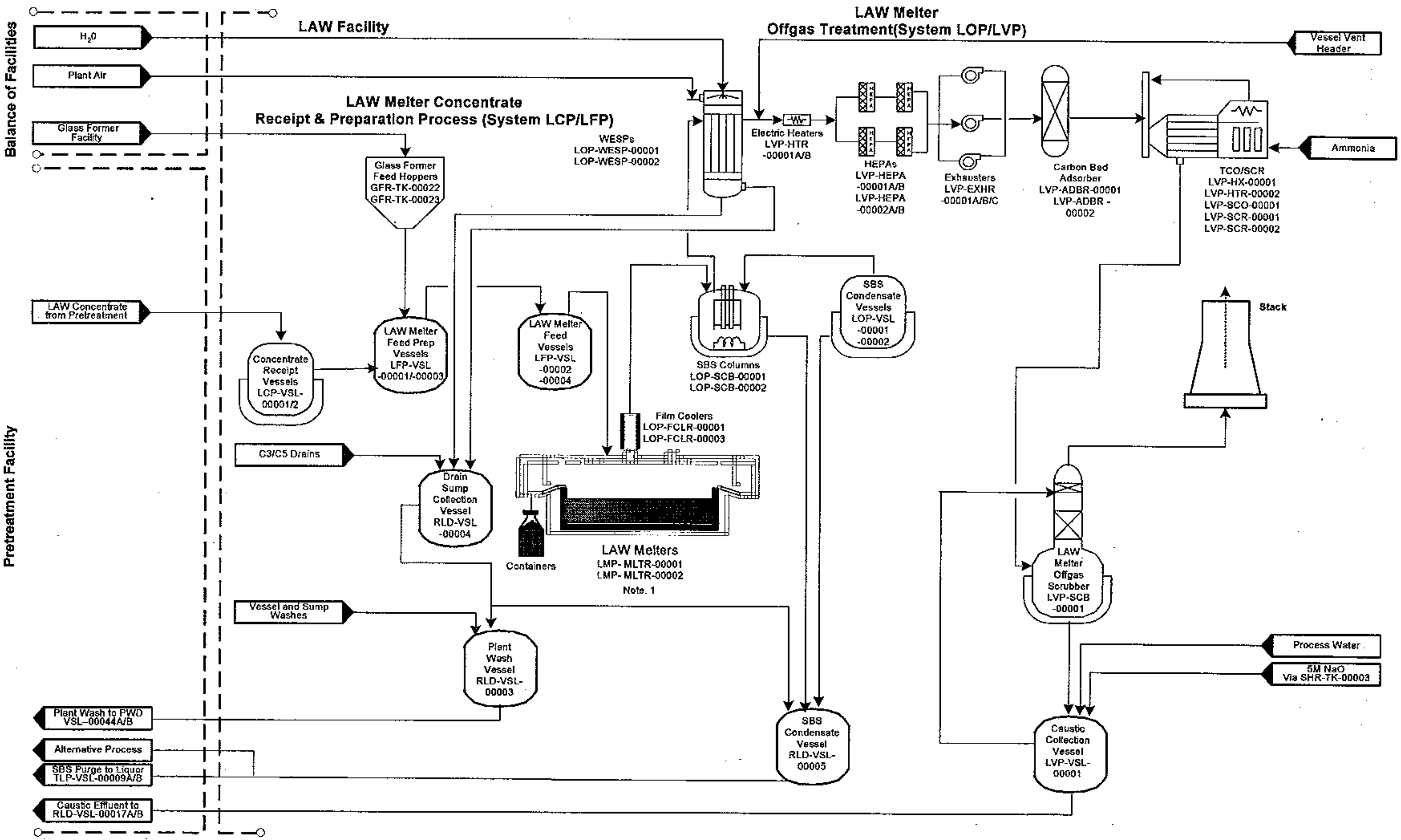
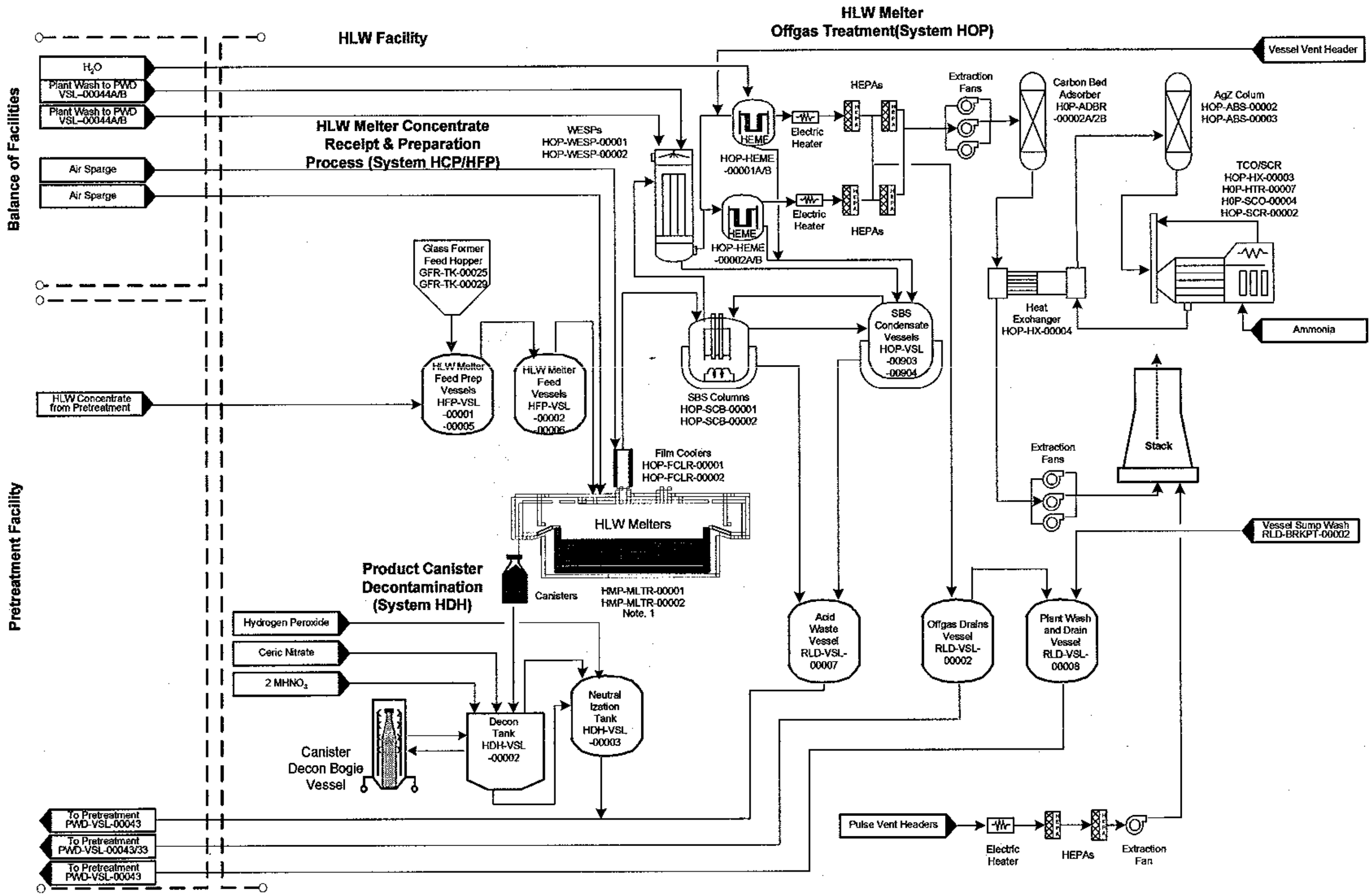


Figure 4A-3 Primary LAW Vitrification Systems



Notes:
1. For this diagram one melter system is shown
but assumes a total of two LAW melter systems of identical capacity.

Figure 4A-4 Primary HLW Vitrification Systems



Notes:

1. For this diagram one melter system is shown but assumes a total of two HLW melter systems of identical capacity.

Figure 4A-5 Waste Feed Receipt Process System (FRP)

DELETED - Superseded by process flow diagram - 24590-PTF-M5-V17T-P0003 (Attachment 51, Appendix 8.1)

Figure 4A-6 Waste Feed Evaporation Process System (FEP)

DELETED - Superseded by process flow diagram - 24590-PTF-M5-V17T-P0004001 and 24590-PTF-M5-V17T-P0004002 (Attachment 51, Appendix 8.1)

Figure 4A-7 Ultrafiltration Process System (UFP)

DELETED - Superseded by process flow diagram - 24590-PTF-M5-V17T-P0009, 24590 PTF-M5-V17T-P0010, and 24590-PTF-M5-V17T-P0011 (Attachment 51, Appendix 8.1)

Figure 4A-8 HLW Lag Storage and Feed Blending Process System (HLP)

DELETED - Superseded by process flow diagram - 24590-PTF-M5-V17T-P0007 and 24590-PTF-M5-V17T-P0008 (Attachment 51, Appendix 8.1)

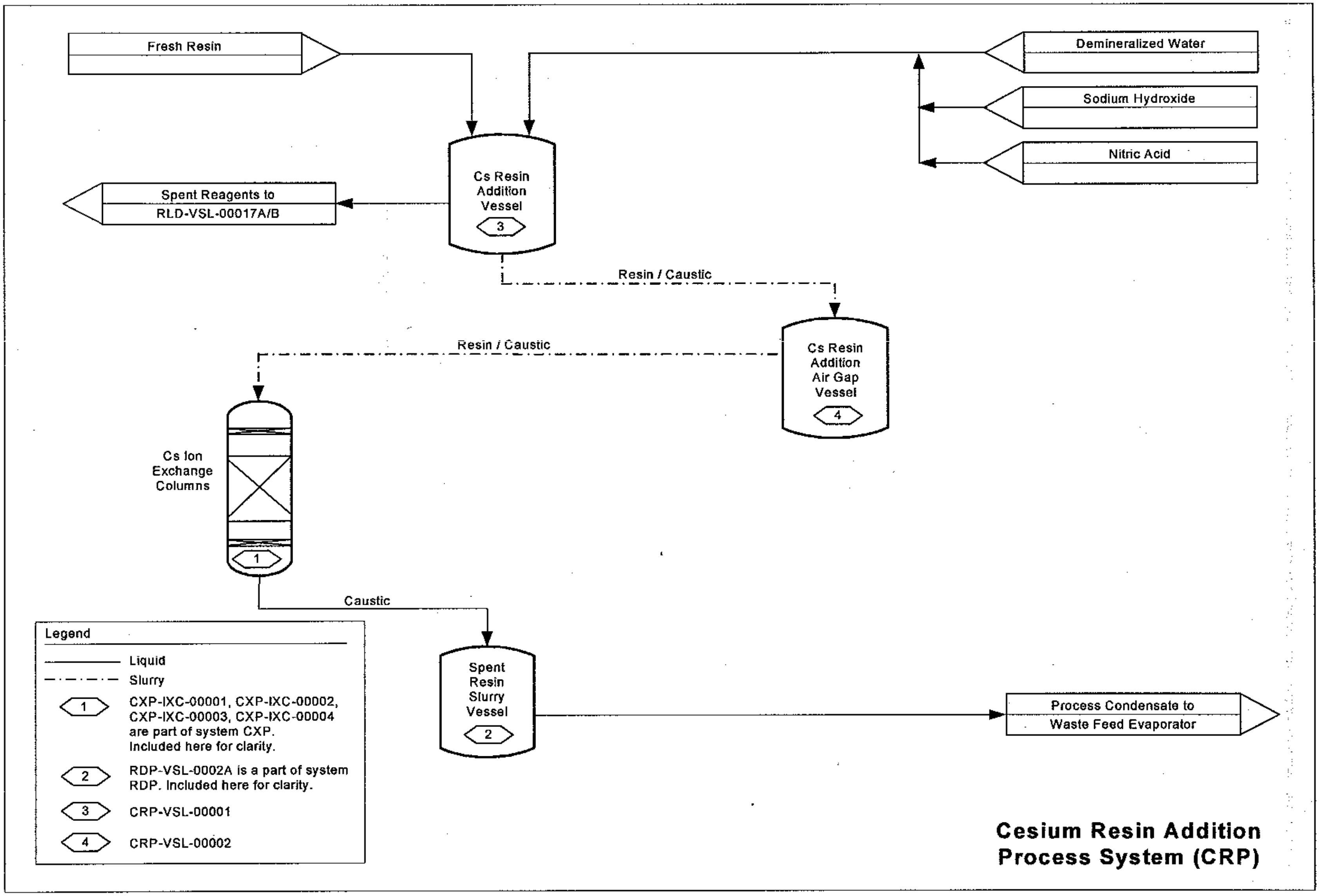
Figure 4A-9 Cesium Ion Exchange Process System (CXP)

DELETED - Superseded by process flow diagram - 24590-PTF-M5-V17T-P0012 and 24590-PTF-M5-V17T-P0013, 24590-PTF-M5-V17T-P0025 (Attachment 51, Appendix 8.1)

Figure 4A-10 Cesium Nitric Acid Recovery Process System (CNP)

DELETED - Superseded by process flow diagram - 24590-PTF-M5-V17T-P0014 (Attachment 51, Appendix 8.1)

Figure 4A-11 Cesium Resin Addition Process System (CRP)



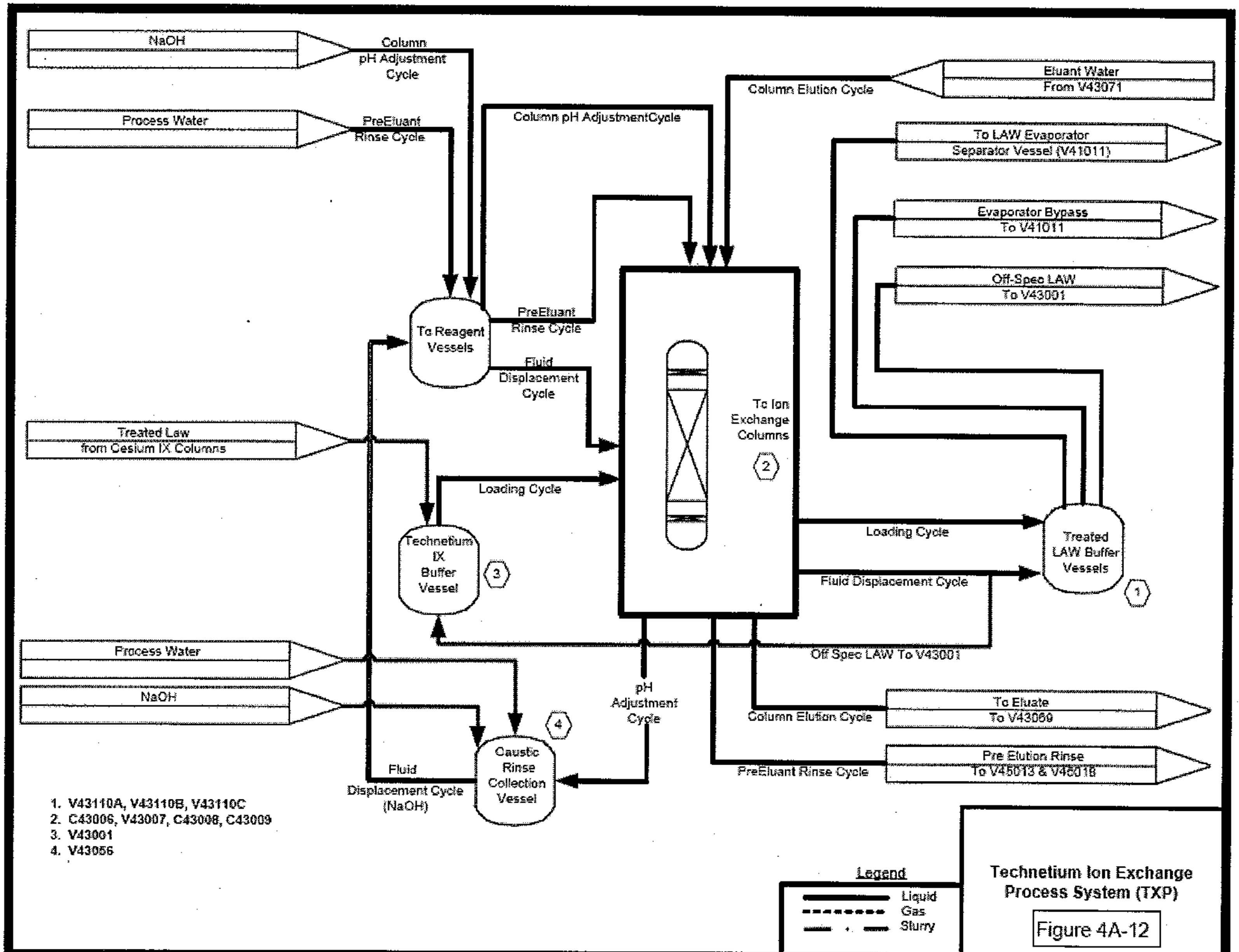

NaOH
Column pH Adjustment Cycle
Process Water
PreEluant Rinse Cycle
Column pH AdjustmentCycle
Column Elution Cycle
Eluant Water From V43071
To LAW Evaporator Separator Vessel (V41011)
Evaporator Bypass To V41011
Off-Spec LAW To V43001
To Reagent Vessels
PreEluant Rinse Cycle
Fluid Displacement Cycle
To Ion Exchange Columns
2
Treated Law from Cesium IX Columns
Loading Cycle
Technetium IX Buffer Vessel
3
Loading Cycle
Fluid Displacement Cycle
Treated LAW Buffer Vessels
1
Off Spec LAW To V43001
Process Water
NaOH
pH Adjustment Cycle
4
Column Elution Cycle
To Eluate To V43069
Pre Elution Rinse To V45013 & V45018
PreEluant Rinse Cycle
Fluid Displacement Cycle (NaOH)
Caustic Rinse Collection Vessel
1. V43110A, V43110B, V43110C
2. C43006, V43007, C43008, C43009
3. V43001
4. V43056
Legend
Liquid
Gas
Slurry
Technetium Ion Exchange Process System (TXP)
Figure 4A-12

Figure 4A-13 Technetium Eluant Recovery Process System (TEP)

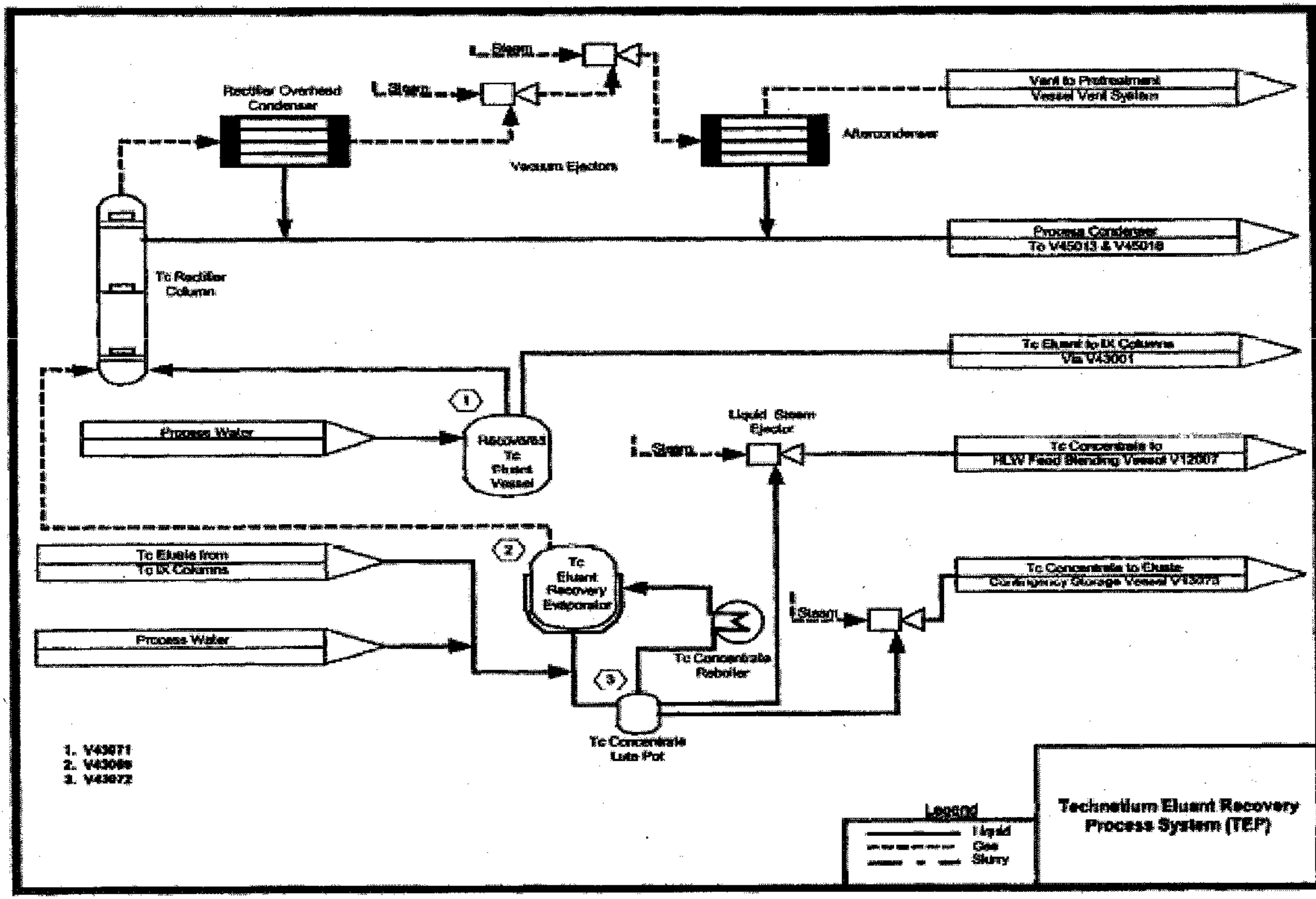


Figure 4A-14 Technetium Resin Addition Process System (TRP)

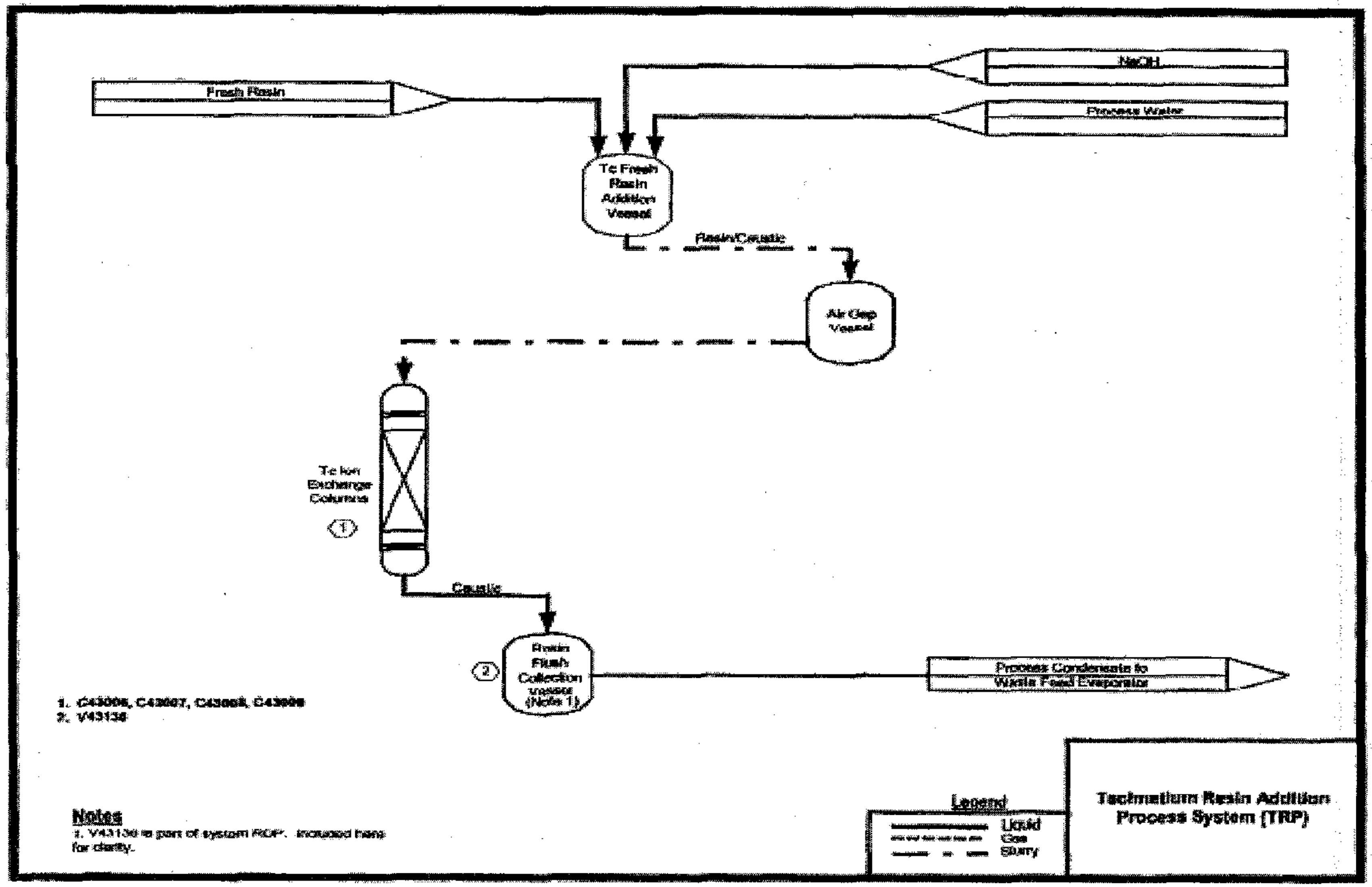


Figure 4A-15 Spent Resin and Dewatering Process System (RDP)

DELETED - Superseded by process flow diagram - 24590-PTF-M5-V17T-P0020 (Attachment 51, Appendix 8.1)

Figure 4A-16 Treated LAW Evaporation Process System (TLP) and Treated LAW Concentrate Storage Process System (TCP)

DELETED - Superseded by process flow diagram - 24590-PTF-M5-V17T-P0005 and 24590-PTF-M5-V17T-P0006 (Attachment 51, Appendix 8.1)

Figure 4A-17 Plant Wash and Disposal System Above Grade (PWD)

DELETED - Superseded by process flow diagram - 24590-PTF-M5-V17T-P0022001 and 24590-PTF-M5-V17T-P0022002 (Attachment 51, Appendix 8.1

Figure 4A-18 Pretreatment Plant Radioactive Liquid Waste Disposal System (RLD)

DELETED - Superseded by process flow diagram - 24590-PTF-M5-V17T-P0022003 and 24590-PTF-M5-V17T-P0022004 (Attachment 51, Appendix 8.1)

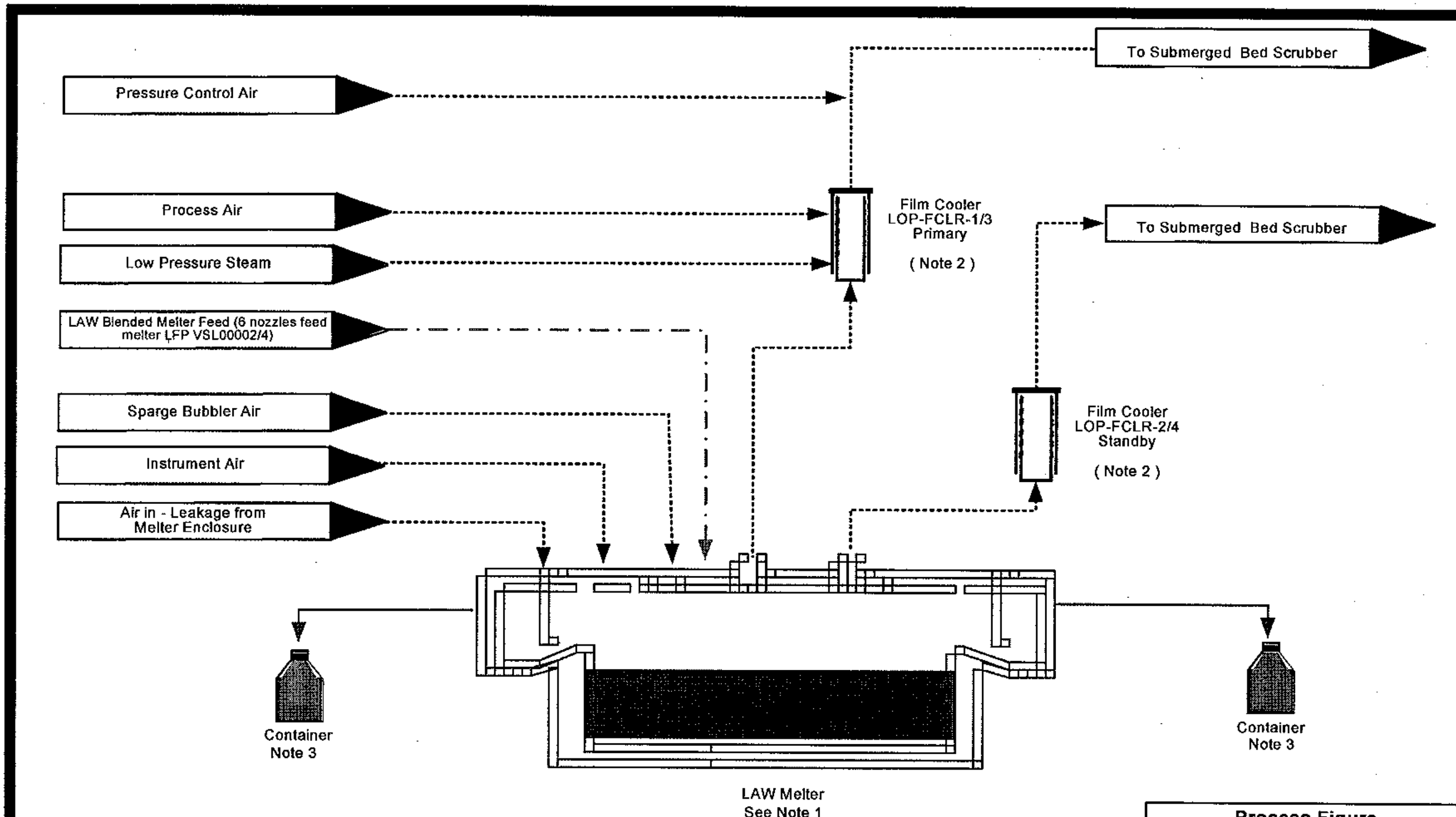
Figure 4A-19 Pretreatment Vessel Vent Process System (PVP) and Pretreatment Plant Vessel Vent Exhaust System (PVV)

DELETED - Superseded by process flow diagram - 24590-PTF-M5-V17T-P0021001 (Attachment 51, Appendix 8.1)

Figure 4A-20 LAW Concentrate Receipt Process System (LCP) and LAW Melter Feed Process System (LFP)

DELETED - Superseded by process flow diagram - 24590-LAW-M5-V17T-P0001 and 24590-LAW-M5-V17T-P0002 (Attachment 51, Appendix 9.1)

Figure 4A-21 LAW Melter Process System (LMP)



Notes:
1. There are 2 melters LAW-MLTR-00001/2 each with a dedicated feed vessel and submerged Bed Scrubber.
2. Each Melter has a Primary (LOP-FCLR-00001/3) and a Standby (LOP-FCLR-00002/4) Film Cooler.
3. Glass is poured from discharge chambers to containers one at a time in an alternating sequence.

Figure 4A-22 LAW Primary Offgas Process System (LOP)

DELETED - Superseded by process flow diagram - 24590-LAW-M5-V17T-P0007 and 24590-LAW-M5-V17T-P0008 (Attachment 51, Appendix 9.1)

Figure 4A-23 LAW Secondary Offgas/Vessel Vent Process System (LVP)

DELETED - Superseded by process flow diagram - 24590-LAW-M5-V17T-P0010 and 24590-LAW-M5-V17T-P0011 (Attachment 51, Appendix 9.1)

Figure 4A-24 LAW Container Finishing Handling System (LFH)

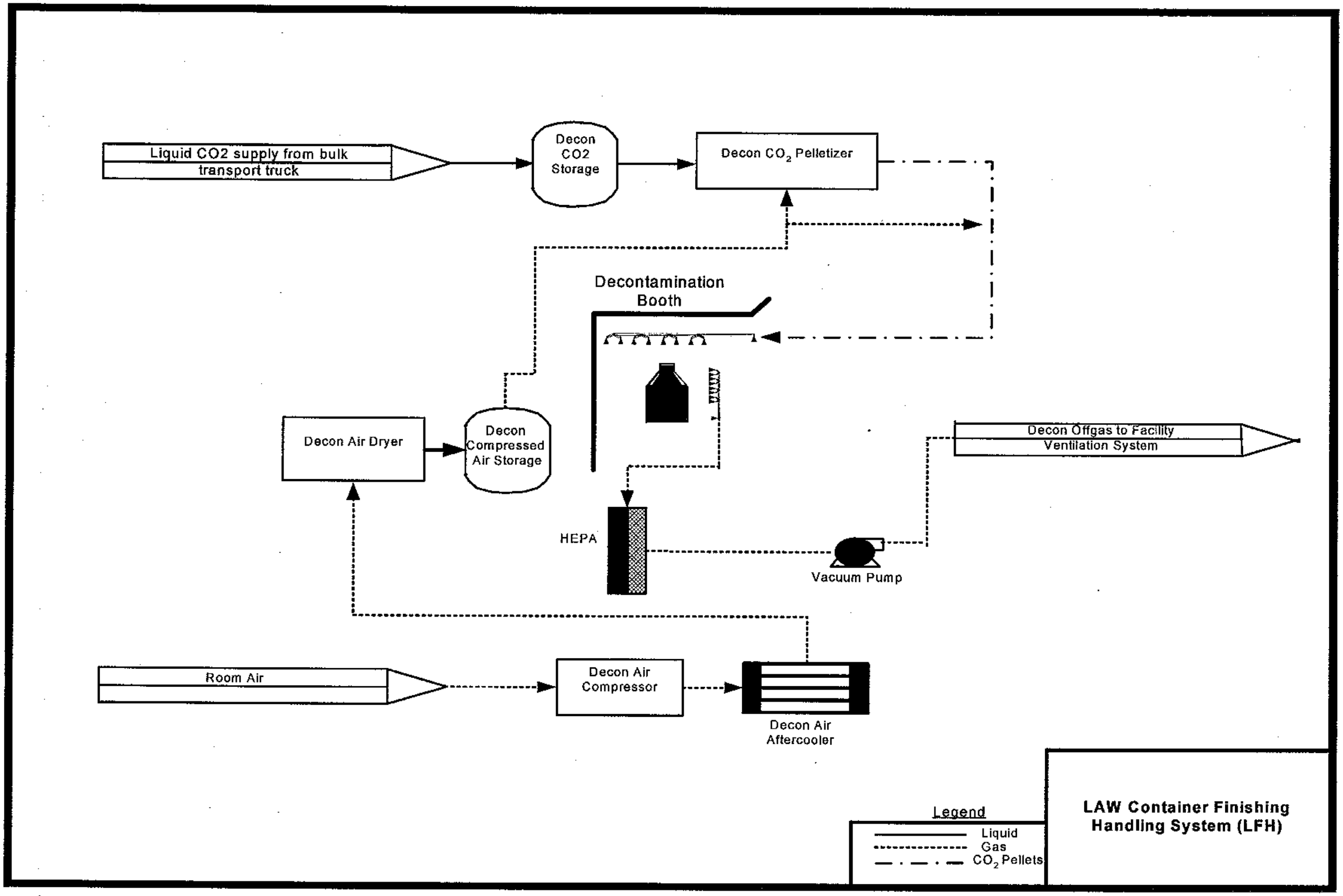


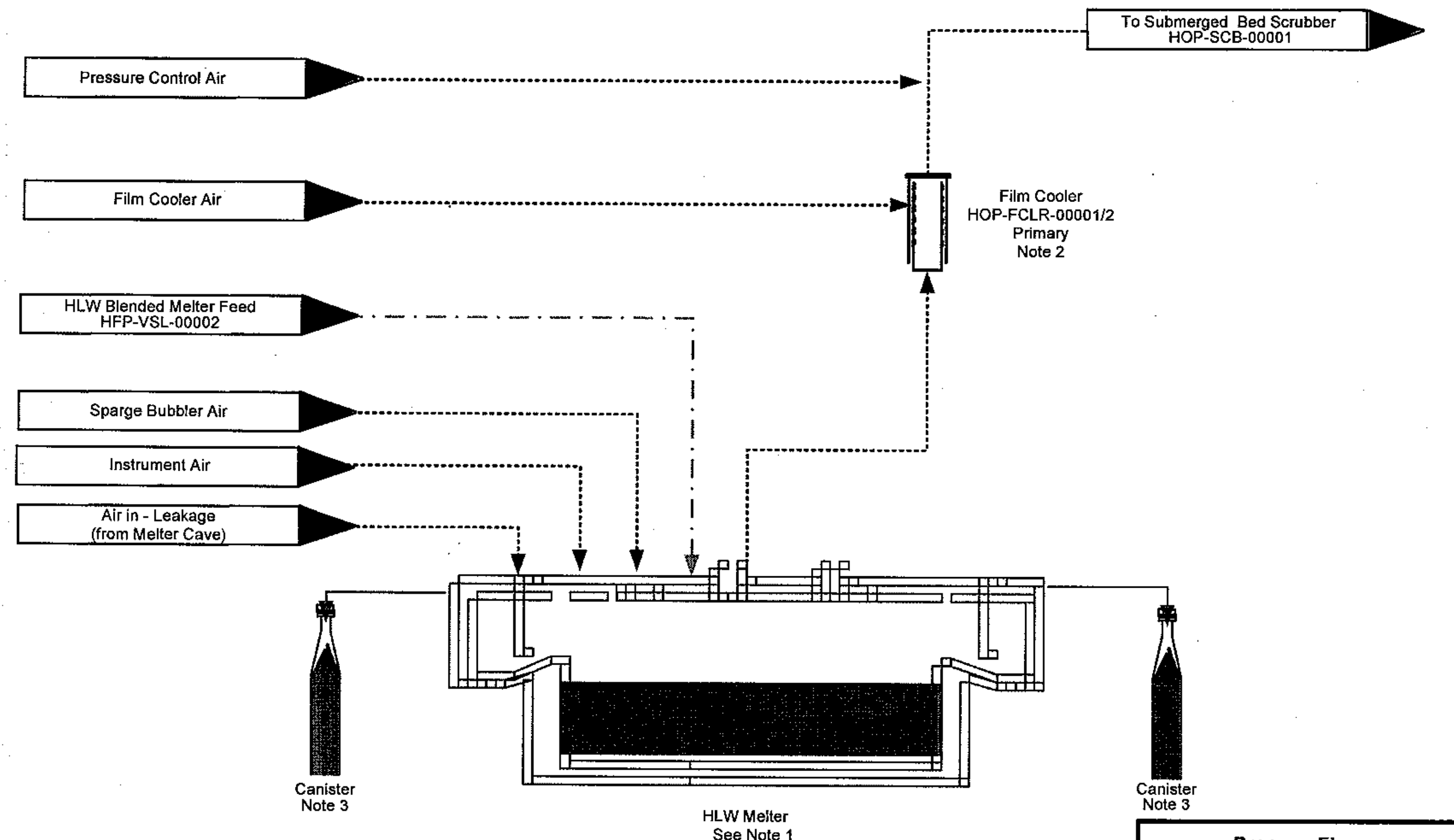
Figure 4A-25 LAW Vitrification Plant Radioactive Liquid Waste Disposal System (RLD) and Non-Radioactive Liquid Waste Disposal System (NLD)

DELETED - Superseded by process flow diagram 24590-LAW-M5-V17T-P0014 (Attachment 51, Appendix 9.1)

Figure 4A-26 HLW Cave Receipt Process System (HCP) and HLW Melter Feed Process System (HFP)

DELETED - Superseded by process flow diagram - 24590-HLW-M5-V17T-P0001 (Attachment 51, Appendix 10.1)

Figure 4A-27 HLW Melter Process System (HMP)



Notes:

1. There are two Melters, HLW-MLTR -00001/2, each with a dedicated Melter Feed Vessel and Submerged Bed Scrubber
2. Each HLW Melter has one Film Cooler.
3. Glass is poured from discharge chambers to containers one at a time, in alternating sequence.

Figure 4A-28 Melter Offgas Treatment Process System (HOP) Primary System

DELETED - Superseded by process flow diagrams - 24590-HLW-M5-V17T-P0003 (Attachment 51, Appendix 10.1)

Figure 4A-29 Melter Offgas Treatment Process System (HOP) Secondary System

DELETED - Superseded by process flow diagram - 24590-HLW-M5-V17T-P0003, 24590-HLW-M5-V17T-P0004, 24590-HLW-M5-V17T-P20003, and 24590-HLW-M5-V17T-P20004 (Attachment 51, Appendix 10.1)

Figure 4A-30 HLW Canister Decontamination Handling System (HDH)

DELETED - Superseded by process flow diagram - 24590-HLW-M5-V17T-P0006 (Attachment 51, Appendix 10.1)

Figure 4A-31 HLW Vitrification Plant Radioactive Liquid Waste Disposal System (RLD) and Non-Radioactive Liquid Waste Disposal System (NLD)

DELETED - Superseded by process flow diagram - 24590-HLW-M5-V17T-P0007001 and 24590-HLW-M5-V17T-P0007002 (Attachment 51, Appendix 10.1)

Figure 4A-32 – Typical Tank System- Waste Feed Receipt Process System (FRP)

DELETED - Superseded by mechanical assembly drawings 24590-PTF-M2-FRP-P0001, 24590-PTF-M2-FRP-P0002, 24590-PTF-M2-FRP-P0003, and 24590-PTF-M2-FRP-P0004 (Attachment 51, Appendix 8.6)

Figure 4A-33 – Typical Tank System- Waste Feed Receipt Process System (FEP)

DELETED - Superseded by mechanical assembly drawings 24590-PTF-MV-FEP-P0001 and 24590-PTF-MV-FEP-P0002 (Attachment 51, Appendix 8.6)

Figure 4A-34 – Typical Tank System- Ultrafiltration Process System (UFP)

DELETED - Superseded by mechanical assembly drawings 24590-PTF-MV-UFP-P0001, 24590-PTF-MV-UFP-P0002, 24590-PTF-MV-UFP-P0003, 24590-PTF-MV-UFP-P0004, 24590-PTF-MV-UFP-P0005, and 24590-PTF-MV-UFP-P0006 (Attachment 51, Appendix 8.6)

Figure 4A-35 – Typical Tank System Ultrafilter

DELETED – Superseded by specification 24590-PTF-3PS-MLFP-TP001 (Attachment 51, Appendix 8.7) and mechanical data sheet 24590-PTF-MLD-UFP-P0007 (Attachment 51, Appendix 8.6)

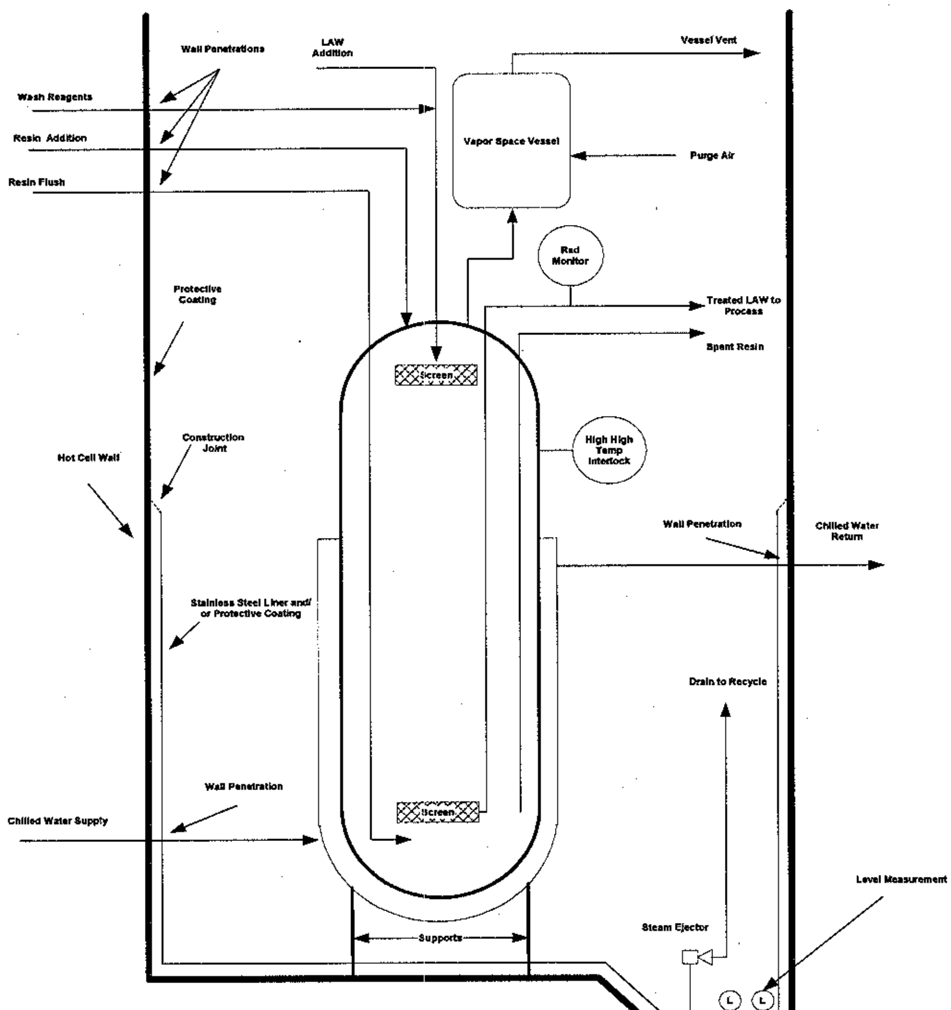
Figure 4A-36 – Typical Tank System –Side Emptying Vessel Cesium Ion Exchange Process System (CXP), Cesium Nitric Acid Recovery Process System (CNP), Technetium Ion Exchange Process System (TXP) and Technetium Eluant Recovery Process System (TEP)

DELETED - Superseded by mechanical assembly drawings 24590-PTF-MV-CXP-P0001, 24590-PTF-MV-CXP-P0003, and 24590-PTF-MV-CNP-P0005(Attachment 51, Appendix 8.6)

Figure 4A-37 – Typical Tank System-Reverse Flow Diverter Emptying Vessel – Cesium Ion Exchange Process System (CXP), Cesium Nitric Acid Recovery Process System (CNP), and Technetium Ion Exchange Process System (TXP)

DELETED - Superseded by mechanical assembly drawings 24590-PTF-MV-CNP-P0001, 24590-PTF-MV-CNP-P0002, 24590-PTF-MV-CXP-P0008, and 24590-PTF-MV-CXP-P0010 (Attachment 51, Appendix 8.6)

Figure 4A-38 Typical Tank System – Cesium Ion Exchange Column



Typical Tank System - Cesium Ion Exchange Column

Figure 4A-39 –Technetium Ion Exchange Column

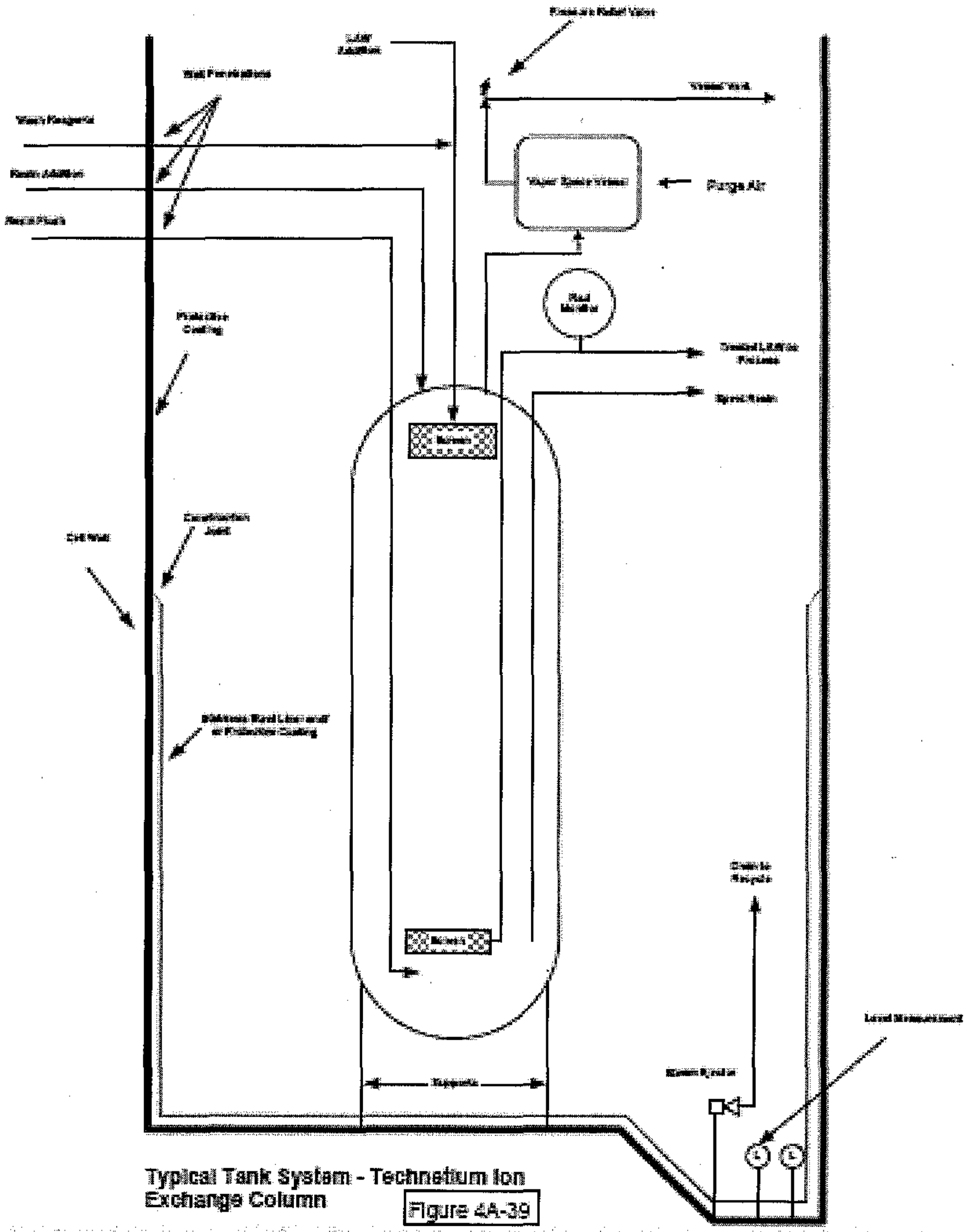


Figure 4A-40 – Typical Tank System-Treated LAW Evaporation Process System (TLP)

DELETED - Superseded by mechanical assembly drawings 24590-PTF-MV-TLP-P0001, and 24590-PTF-MV-TLP-P0002 (Attachment 51, Appendix 8.6)

Figure 4A-41-Typical Tank System – Treated LAW Concentrate Storage Process System (TCP)

DELETED - Superseded by mechanical assembly drawings 24590-PTF-MV-TCP-P0002 (Attachment 51, Appendix 8.6)

Figure 4A-42 Typical Tank System – HLW Lag Storage and Feed Blending Process System (HLP)

DELETED - Superseded by mechanical assembly drawings 24590-PTF-MV-HLP-P0003, 24590-PTF-MV-HLP-P0004, 24590-PTF-MV-HLP-P0005, and 24590-PTF-MV-HLP-P0006 (Attachment 51, Appendix 8.6)

Figure 4A-43 Typical Tank System – Spent Resin Collection and Dewatering System (RDP)

DELETED - Superseded by mechanical assembly drawings 24590-PTF-MV-RDP-P0001, 24590-PTF-MV-RDP-P0002, and 24590-PTF-MV-RDP-P0003 (Attachment 51, Appendix 8.6)

Figure 4A-44 Typical Tank System - Plant Wash and Disposal System (PWD)

DELETED- superceded by process flow diagram, 24590-PTF-M5-V17T-P0022002 (Attachment 51, Appendix 8.1)

Figure 4A-45 Typical Tank System – Pretreatment Vessel Vent Process System (PVP)

DELETED - Superseded by mechanical assembly drawing 24590-PTF-MV-PVP-P0002 (Attachment 51, Appendix 8.6

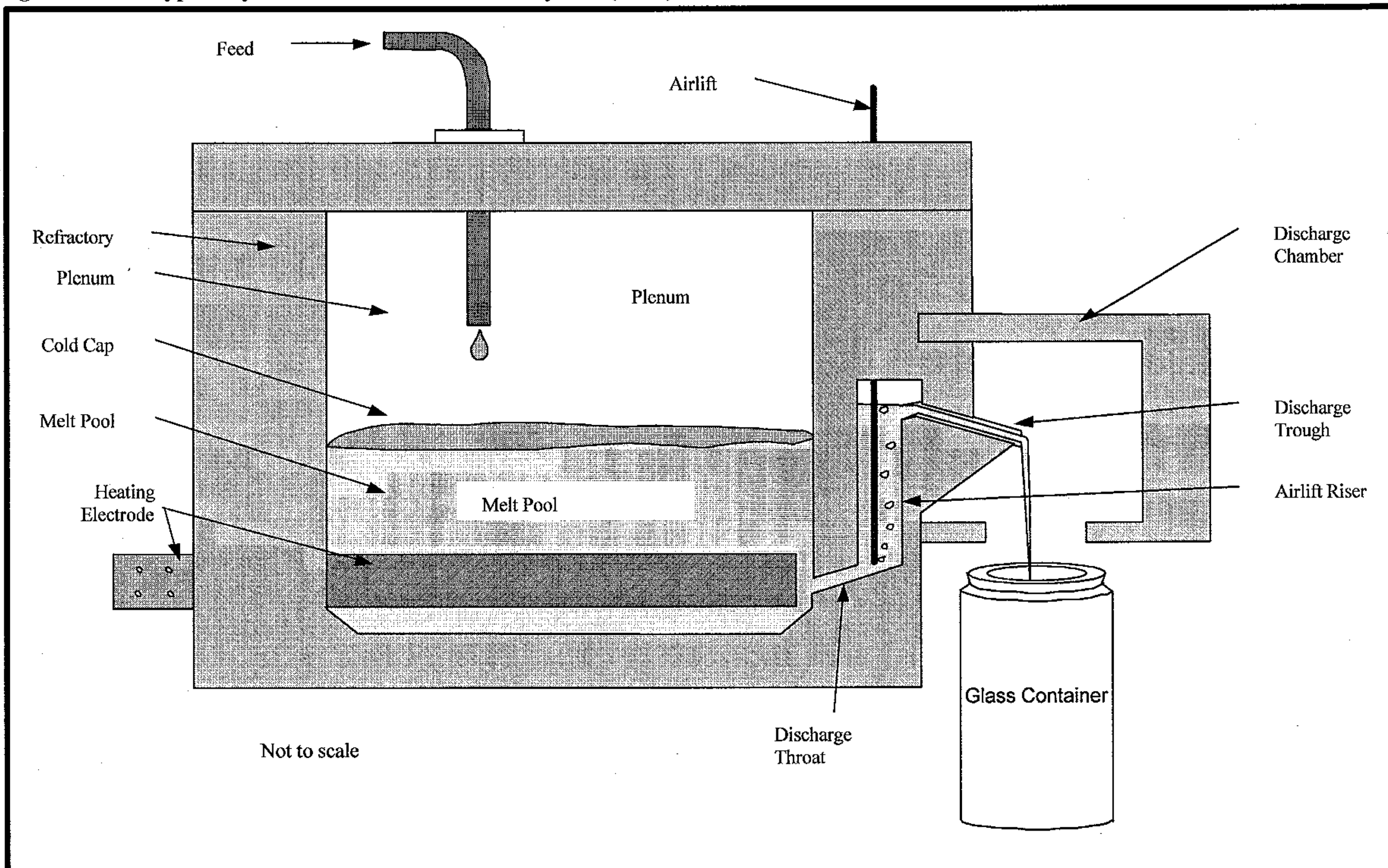
Figure 4A-46 Typical Tank System –LAW Concentrate Receipt Process System (LCP)

DELETED - Superseded by mechanical assembly drawings 24590-LAW-MV-LCP-P0001 and 24590-LAW-MV-LCP-P0002 (Attachment 51, Appendix 9.6)

Figure 4A-47 Typical Tank System –LAW Melter Feed Process System

DELETED - Superseded by mechanical assembly drawings 24590-LAW-MV-LFP-P0001, 24590-LAW-MV-LFP-P0002, 24590-LAW-MV-LFP-P0004, and 24590-LAW-MV-LVP-P0005 (Attachment 51, Appendix 9.6)

Figure 4A-48 Typical System - LAW Melter Process System (LMP)



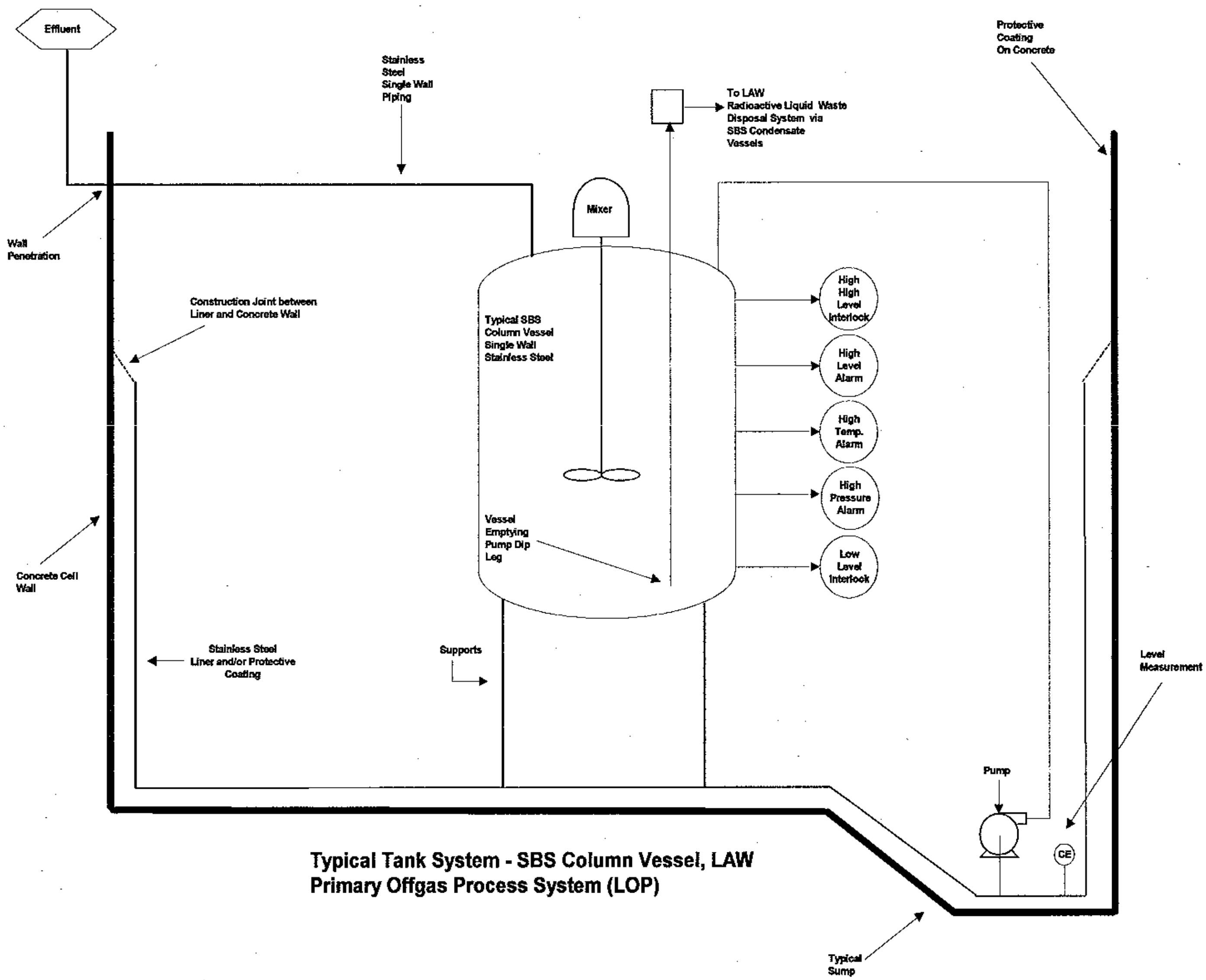
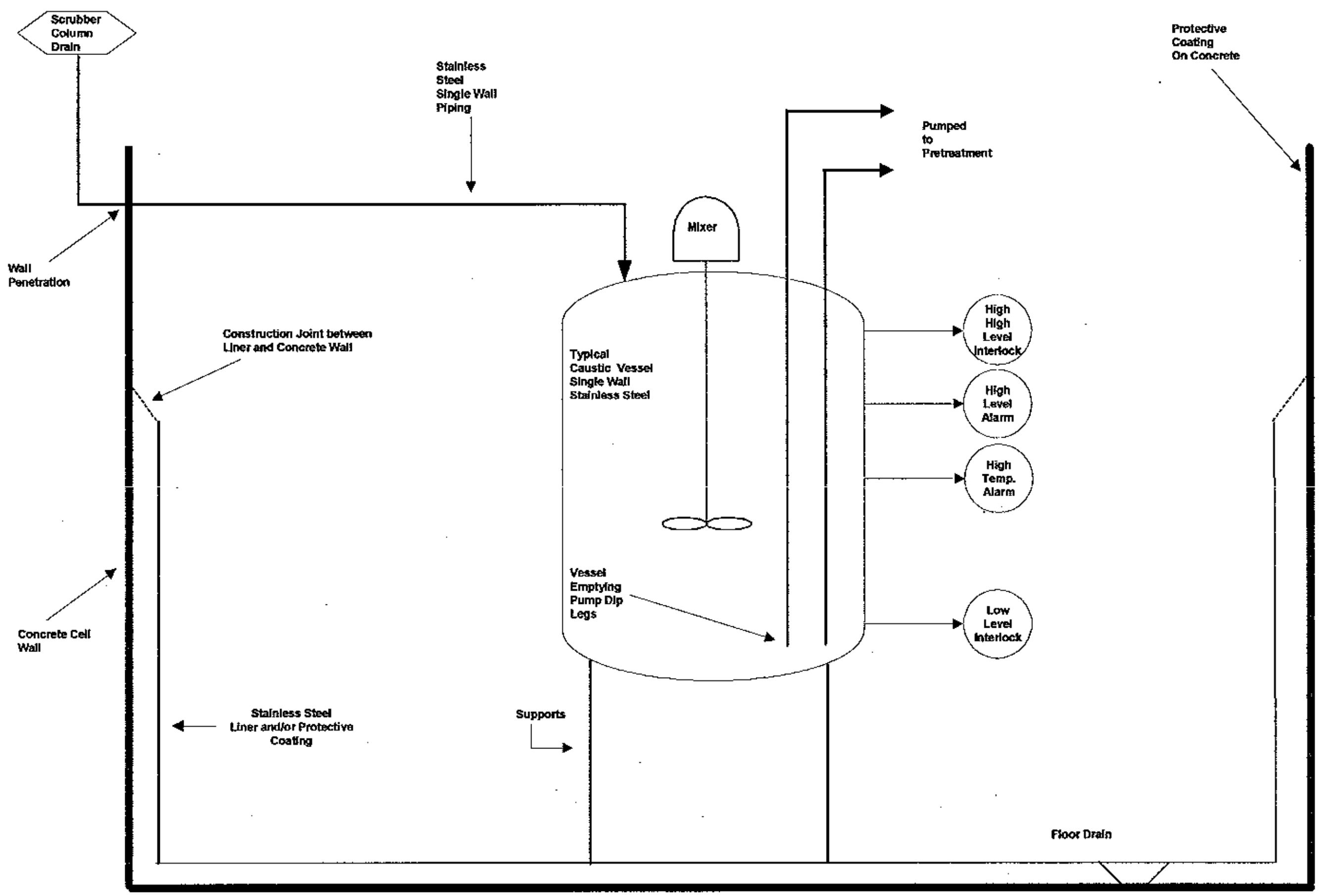


Figure 4A-49 Typical Tank System – SBS Column Vessel, LAW Primary Offgas Process System (LOP)

Figure 4A-50 Typical Tank System –SBS Condensate Vessel, LAW Primary Offgas Process System (LOP)

DELETED - Superseded by mechanical assembly drawings 24590-LAW-MV-LOP-P0001 and 24590-LAW-MV-LOP-P0002 (Attachment 51, Appendix 9.6)



Typical Tank System - LAW Secondary Offgas/Vessel Vent Process System (LVP)

Figure 4A-51 Typical Tank System – LAW Secondary Offgas/Vessel Vent Process System (LVP)

Figure 4A-52 Typical Tank System – HLW Cave Receipt Process System (HCP)

DELETED - Superseded by piping and instrumentation diagram 24590-HLW-M6-HCP-P0001 and 24590-HLW-M6-HCP-P0002 (Attachment 51, Appendix 10.2)

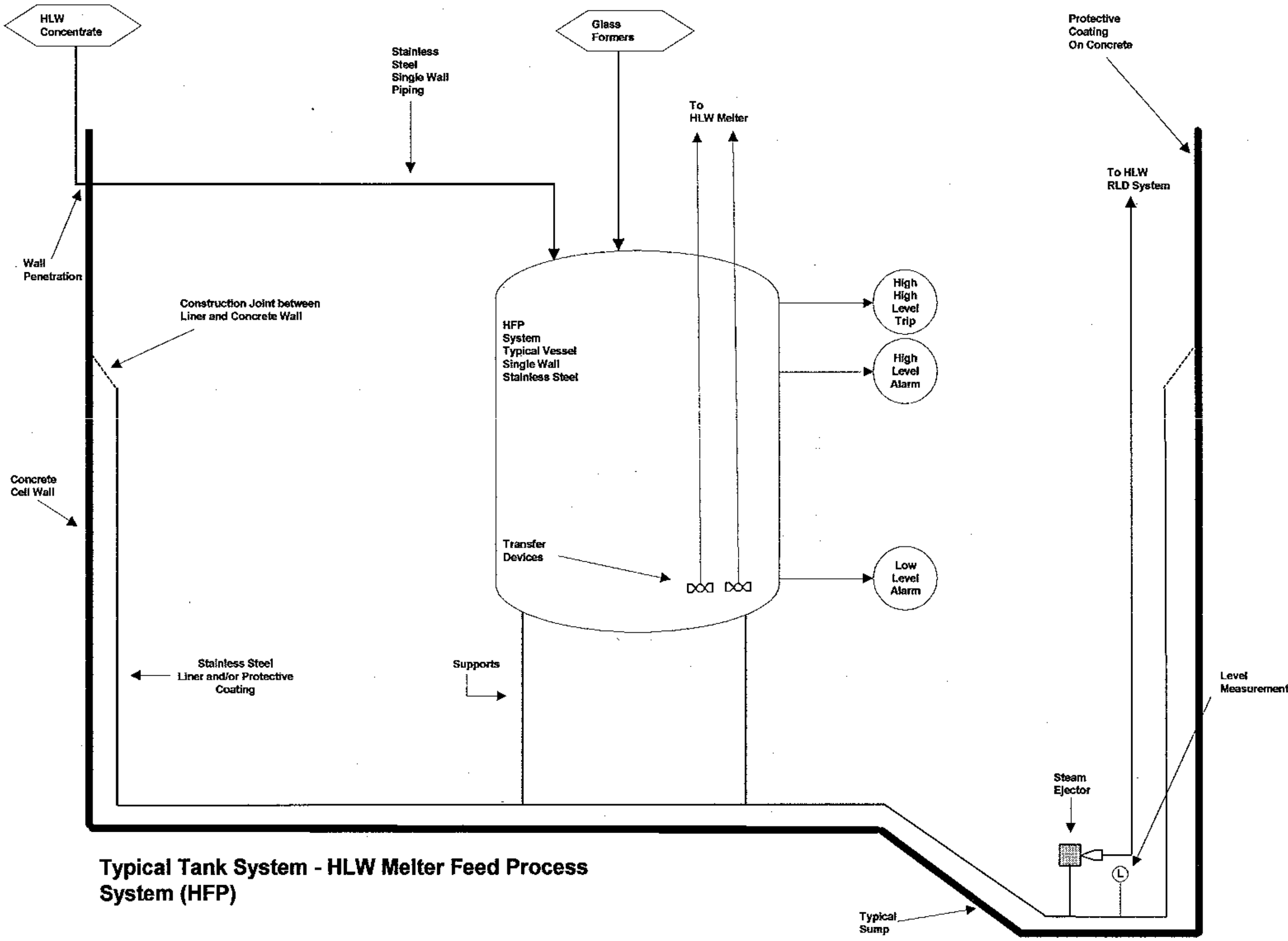


Figure 4A-53 Typical Tank System – HLW Melter Feed Process System (HFP)

Figure 4A-54 Typical System - HLW Melter Process System (HMP)

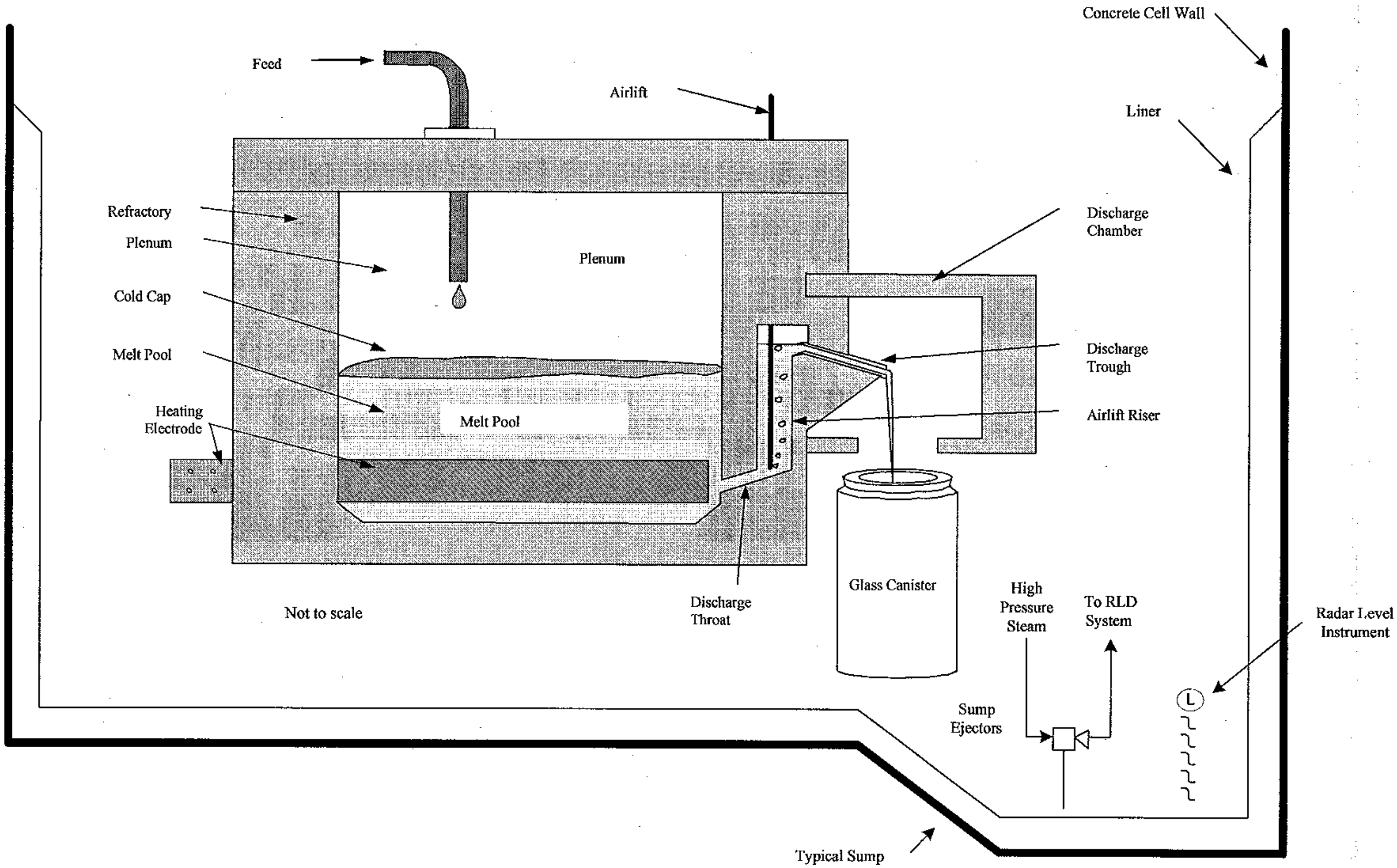


Figure 4A-55 Typical Tank System - Melter Offgas Treatment Process System (HOP)

DELETED superceded by mechanical assembly drawing 24590-HLW-MV-HOP-P0001 and 24590-HLW-MV-HOP-P0003 (Attachment 51, Appendix 10.6)

Figure 4A-56 Typical Tank System – HLW Canister Decontamination Handling System (HDH)

DELETED- Superseded by mechanical assembly drawings 24590-HLW-MV-HDH-P0003, 24590-HLW-MV-HDH-P0004, 24590-HLW-MV-HDH-P0005, 24590-HLW-MV-HDH-P0006, 24590-HLW-MV-HDH-P0007 (Attachment 51, Appendix 10.6)

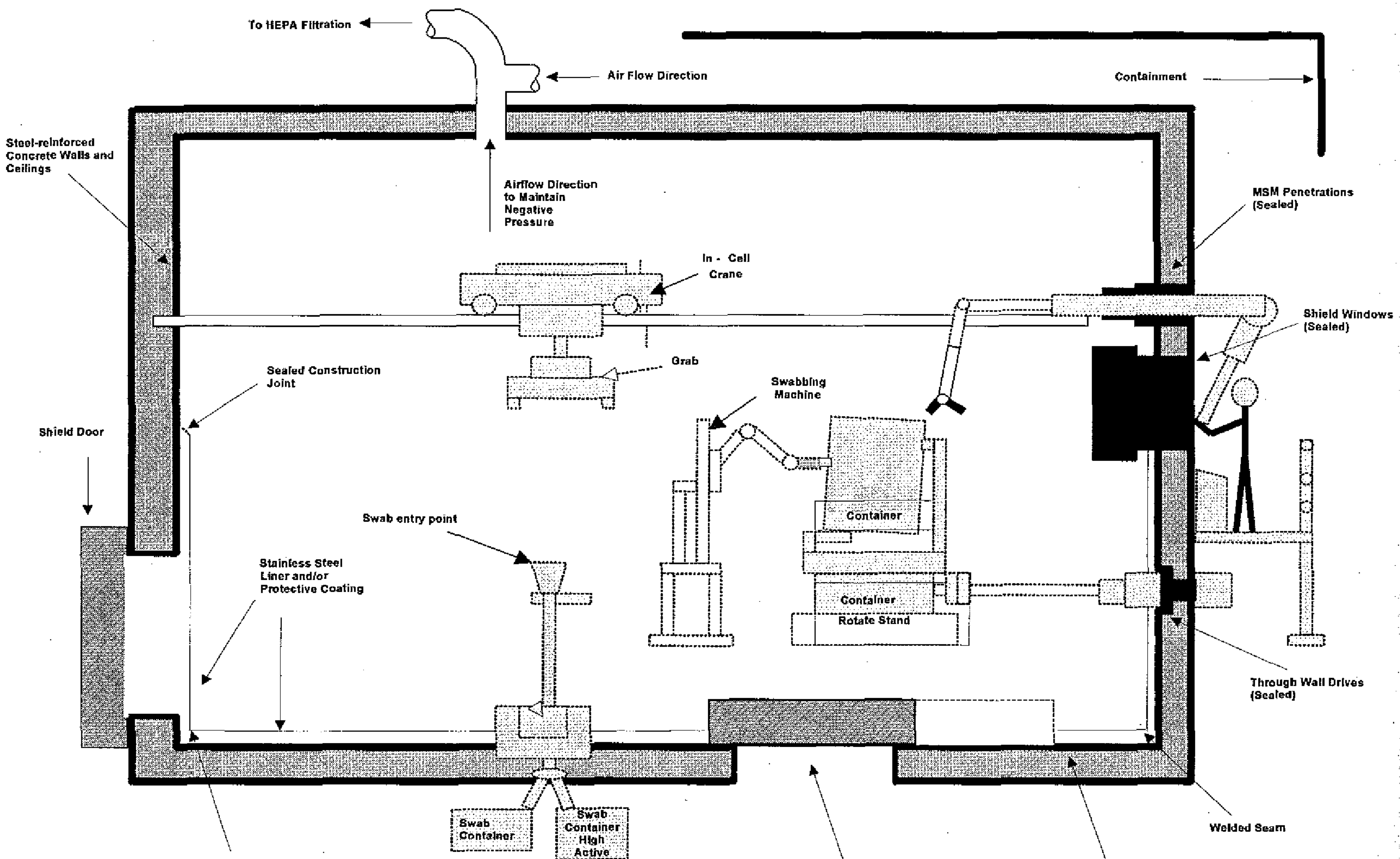
Figure 4A-57 Typical Tank System - Radioactive Liquid Waste Disposal System (RLD)

DELETED-Superseded by equipment assembly drawing 24590-LAW-MV-RLD-P0001 (Attachment 51, Appendix 9.6)

Figure 4A-58 ~~Typical Tank System – BOF Container Storage Area~~

RESERVED

Figure 4A-59 Typical System - Containment Building (Sheet 1)



Typical System - Containment Building

Figure 4A-59 Typical System - Containment Building Typical Design Features Crosswalk (Sheet 2)

Containment Building	Negative Cell Air Pressure	Air Flow to HEPA Filters	SS Liner With Welded Seams	Import / Export Hatch - (Controlled Air Gap)	Shield Windows - (Sealed)	Steel Reinforced Concrete Floor/Foundation	Steel Reinforced Concrete Walls & Ceilings	Through Wall MSMs - (Sealed)	In - Cell Bridge Crane / Monorail	Horiz./Vertical Shield Doors - (Controlled Air Gap)	Miscellaneous In-cell Room Equipment
Pretreatment Plant											
Pretreatment Hot Cell Containment Building (P-0123)	X	X	X	X	X	X	X	X	X	X	X
Pretreatment Maintenance Containment Building											
PM0124 Hot Cell Crane Maintenance ~~building~~ Mezzanine	X		~~X~~		X	X	X		X		X
P-0121A Spent Resin Dewatering	X	X		X	X	X	X				X
P-0122A Waste Packaging Area	X	X	~~X~~	X	X	X	X				X
P-0123A Remote Decontamination Maintenance Cave	X	X	X	X	X	X	X		X		X
P-0124 C3 Workshop	X	X	~~X~~	X	X	X	X		X		X
P-0124A C3 Workshop	X	X	~~X~~	X	X	X	X		X		X
P-0125 ~~Filter Cask Airlock~~ Cask Lidding Airlock	X	X		X	X	X	X			X	X
P-0125A ~~Filter Cask Area~~ Cask Lidding Room	X	X	~~X~~	X	X	X	X		X		X
P-0128A MSM Repair Area	X	X		X	X	X	X				X
P-0128 Temporary Storage Room	X				X	X	X				X
Pretreatment Filter Package Maintenance Containment Building (P-0223)	X	X	X			X	X			X	X
Pretreatment Air Filter Cave Room ~~Package~~ Containment Building (~~P-0355~~ 0335)	X	X	X			X	X			X	X

Containment Building	Negative Cell Air Pressure	Air Flow to HEPA Filters	SS Liner With Welded Seams	Import / Export Hatch - (Controlled Air Gap)	Shield Windows - (Sealed)	Steel Reinforced Concrete Floor/Foundation	Steel Reinforced Concrete Walls & Ceilings	Through Wall MSMs - (Sealed)	In - Cell Bridge Crane / Monorail	Horiz./Vertical Shield Doors - (Controlled Air Gap)	Miscellaneous In-cell Room Equipment
LAW Vitrification Plant											
LAW LSM Gallery Containment Building (L-0112)	X	X				X	X			X	X
ILAW Container Finishing Containment Building											
L-0109B Swabbing Cell North Line	X	X		X	X	X	X	X	X	X	X
L-0109C Decontamination Area North Line	X	X		X	X	X	X	X	X	X	X
L-0109D Inert Fill / Welding Area North Line	X	X		X	X	X	X	X	X	X	X
L-0115B Swabbing Cell South Line	X	X		X	X	X	X	X	X	X	X
L-0115C Decontamination Area South Line	X	X		X	X	X	X	X	X	X	X
L-0115D Inert Fill / Welding Area South Line	X	X		X	X	X	X	X	X	X	X
L-0109E Container Monitoring/Export Area - North Line	X	X		X	X	X	X	X	X	X	X
L-0115E Container Monitoring/Export Area - South Line	X	X		X	X	X	X	X	X	X	X
LAW Vit Plant C3 Workshop Containment Building (L-226A)	X	X				X	X		X		X
LAW Consumable Import/Export Containment Building (L-0119B)	X	X				X	X		X		X
LAW Pour Cave Containment Building											
L-B015A Pour Cave (Melter 1)	X	X		X	X	X	X	X	X	X	X
L-B013C Pour Cave (Melter 1)	X	X		X	X	X	X	X	X	X	X
L-B013B Pour Cave (Melter 2)	X	X		X	X	X	X	X	X	X	X
L-B011C Pour Cave (Melter 2)	X	X		X	X	X	X	X	X	X	X
L-B011B (Spare)	X	X		X	X	X	X	X	X	X	X
L-B009B (Spare)	X	X		X	X	X	X	X	X	X	X
ILAW Container Buffer Storage Containment Building											
L-B025C											
L-B025D											

Containment Building	Negative Cell Air Pressure	Air Flow to HEPA Filters	SS Liner With Welded Seams	Import / Export Hatch - (Controlled Air Gap)	Shield Windows - (Sealed)	Steel Reinforced Concrete Floor/Foundation	Steel Reinforced Concrete Walls & Ceilings	Through Wall MSMs - (Sealed)	In - Cell Bridge Crane / Monorail	Horiz./Vertical Shield Doors - (Controlled Air Gap)	Miscellaneous In-cell Room Equipment
HLW Vitrification Plant											
HLW Melter Cave No. 1 Containment Building:	X	X	X	X	X	X	X	X	X	X	X
H-0117 Melter Cave No. 1	X	X	X	X	X	X	X	X	X	X	X
H-0116B Melter Cave No. 1 - C2/C3 Airlock	X	X				X	X			X	
H-0310A Melter Cave No. 1 Equipment Decontamination Area	X	X	X	X	X	X	X	X	X	X	
HLW Melter Cave No. 2 Containment Building:	X	X	X	X	X	X	X	X	X	X	X
H-0106 Melter Cave No. 2	X	X	X	X	X	X	X	X	X	X	X
H-0105B Melter Cave No. 2 - C2/C3/ Airlock	X	X				X	X		X	X	
H-0304A Melter Cave No. 2 Equipment Decontamination Area	X	X	X	X	X	X	X	X	X	X	
IHLW Canister Handling Cave Containment Building (H-0136)	X	X	X	X	X	X	X	X	X	X	X
IHLW Canister Swab and Monitoring Cave Containment Building (H-0133)	X	X	X	X	X	X	X	X	X	X	
HLW Vit Plant C3 Workshop Containment Building (H-0311A/B)	X	X				X	X				X
HLW Filter Cave Containment Building (H-0104)	X	X		X	X	X	X	X	X	X	X
HLW Waste Handling Area Containment Building:	X	X				X	X				
H-0410B Waste Handling Area	X	X				X	X				
H-0411 Waste Handling Area	X	X				X	X				
HLW Pour Tunnel No. 1 Containment Building (H-B032)	X	X	X	X		X	X		X		
HLW Pour Tunnel No. 2 Containment Building (H-B005A)	X	X	X	X		X	X		X		
HLW Drum Swabbing and Monitoring Area Containment Building:	X	X				X	X		X		
H-0126A/B Swabbing and Monitoring Area	X	X				X	X				
HB-028 Cask Transfer Tunnel	X	X				X	X		X		

Figure 4A-60 Simplified General Arrangement Pretreatment - Plan at El. -45'

DELETED- Superseded by general arrangement plan -24590-PTF-P1-P01T-P0006 (Attachment 51, Appendix 8.4)

Figure 4A-61 Simplified General Arrangement Pretreatment - Plan at El. 0'

DELETED- Superseded by general arrangement plan -24590- PTF-P1-P01T-P0001 (Attachment 51, Appendix 8.4)

Figure 4A-62 Simplified General Arrangement Pretreatment - Plan at El. 28'

DELETED- Superseded by general arrangement plan -24590- PTF-P1-P01T-P0002 (Attachment 51, Appendix 8.4)

Figure 4A-63 Simplified General Arrangement Pretreatment - Plan at El. 56'

DELETED- Superseded by general arrangement plan 24590-PTF-P1-P01T-P0003 (Attachment 51, Appendix 8.4)

Figure 4A-64 Simplified General Arrangement Pretreatment - Plan at El. 77'

DELETED- Superseded by general arrangement plan 24590-PTF-P1-P01T-P0004 (Attachment 51, Appendix 8.4)

Figure 4A-65 Simplified General Arrangement Pretreatment - Plan at El. 98

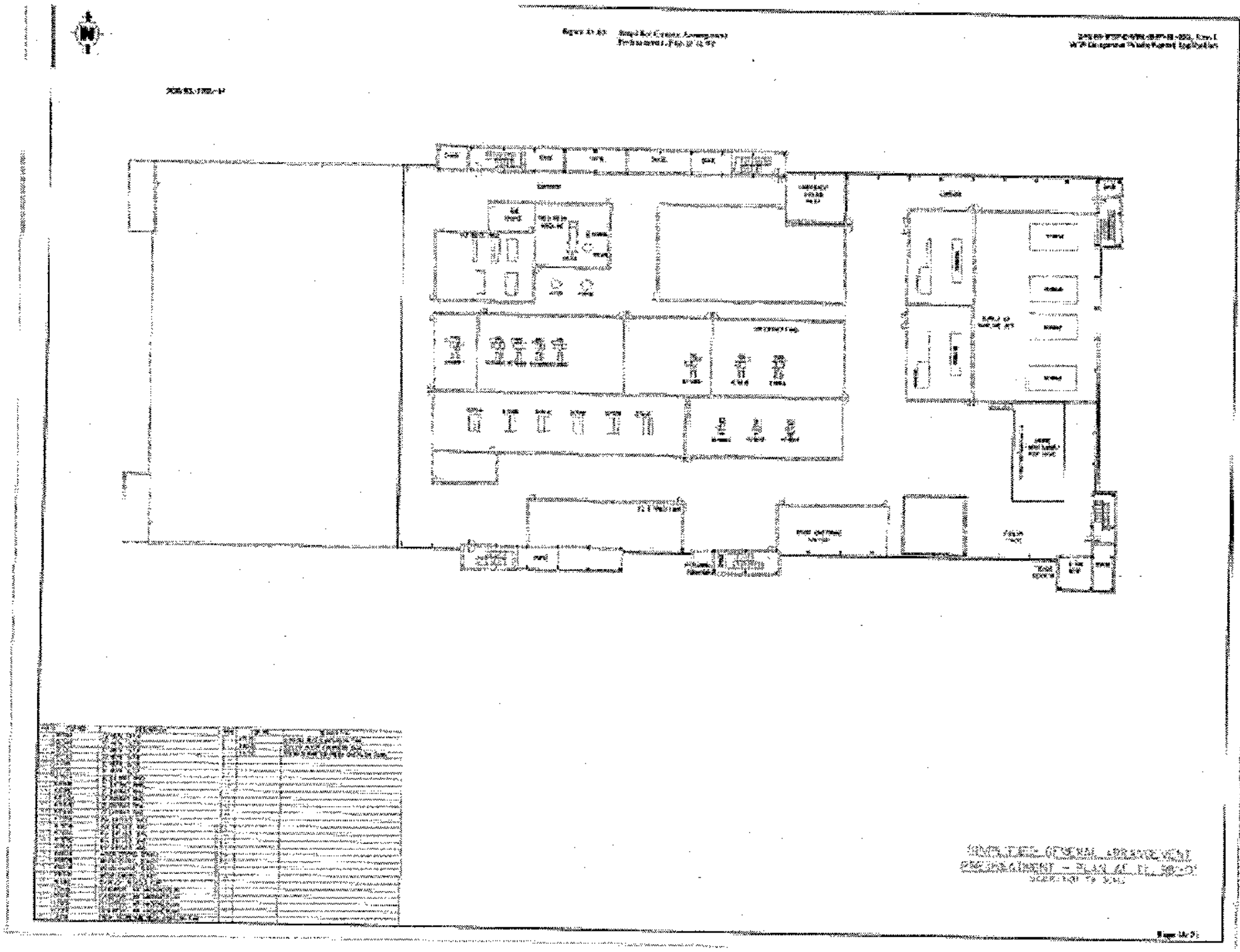


Figure 4A -66 Simplified General Arrangements LAW – Plan at El -21''

DELETED- Superseded by general arrangement plan -24590-LAW-P1-P01T-P0001 (Attachment 51, Appendix 9.4)

Figure 4A -67 Simplified General Arrangements LAW –3'

DELETED- Superseded by general arrangement plan -24590-LAW-P1-P01T-P0002 (Attachment 51, Appendix 9.4)

Figure 4A-68 Simplified General Arrangement LAW - Plan at El. 22'

DELETED- Superseded by general arrangement plan 24590-LAW-P1-P01T-P0003 (Attachment 51, Appendix 9.4)

Figure 4A-69 Simplified General Arrangement LAW - Plan at El. 22'

DELETED- Superseded by general arrangement plan 24590-LAW-P1-P01T-P0004 (Attachment 51, Appendix 9.4)

Figure 4A-70 Simplified General Arrangement LAW - Plan at El. 48'

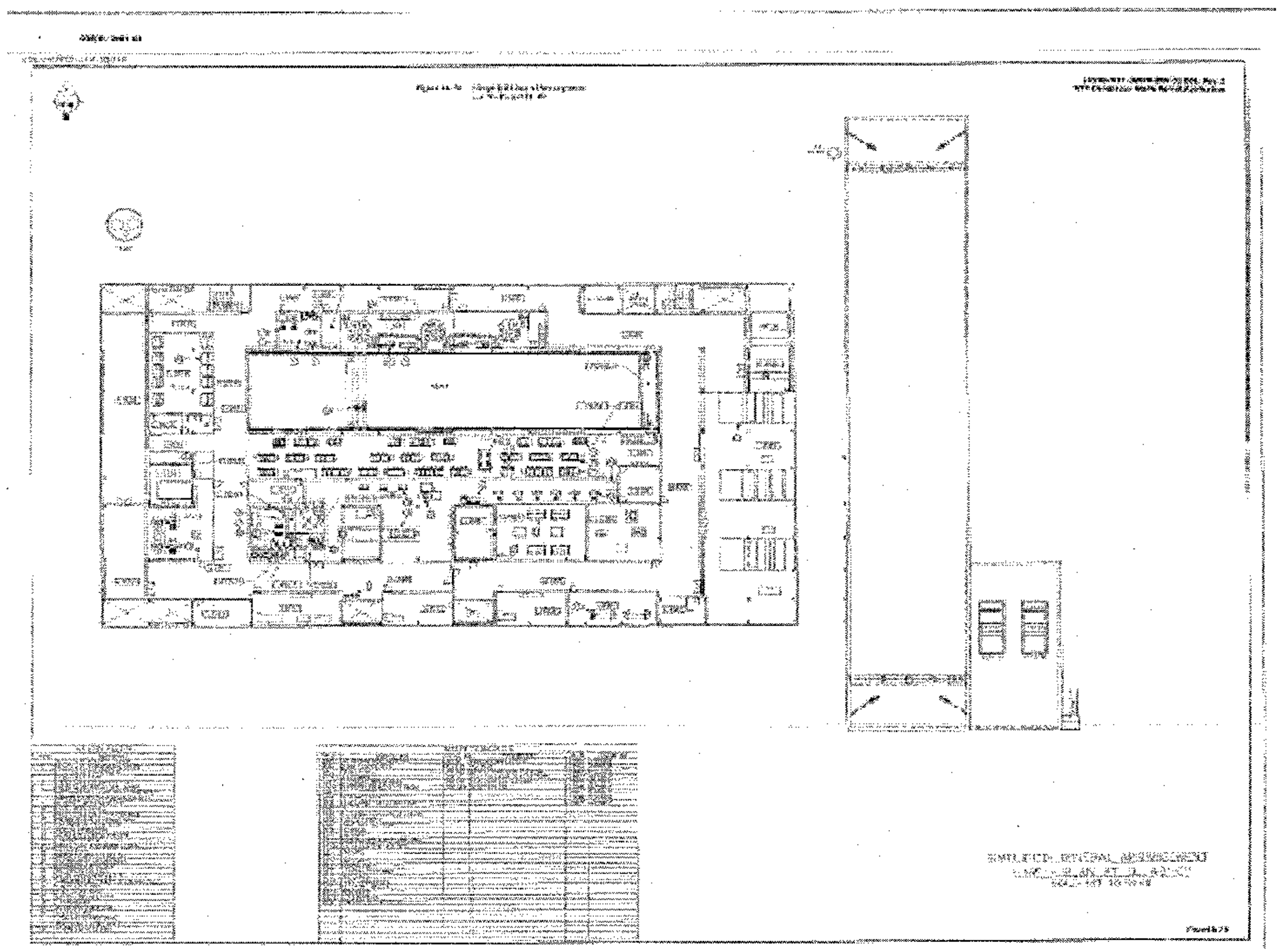


Figure 4A-71 Simplified General Arrangement HLW - Plan at El. -21'

DELETED- Superseded by general arrangement plan -24590-HLW-P1-P01T-P0001 (Attachment 51, Appendix 10.4)

Figure 4A-72 Simplified General Arrangement HLW - Plan at El. 0'

DELETED - Superseded by general arrangement plan 24590-HLW-P1-P01T-P0002 (Attachment 51, Appendix 10.4)

Figure 4A-73 ~~Simplified General Arrangement HLW - Plan at El. 11'~~

RESERVED

Figure 4A-74 Simplified General Arrangement HLW - Plan at El. 30'

DELETED- Superseded by general arrangement plan 24590-HLW-P1-P01T-P0004 (Attachment 51, Appendix 10.4)

Figure 4A-75 Simplified General Arrangement HLW - Plan at El. 49

DELETED- Superseded by general arrangement drawing 24590-HLW-P1-P01T-P0005 (Attachment 51, Appendix 10.4)

Figure 4A-76 ~~Simplified General Arrangement HLW - Plan at El. 62~~

RESERVED

Figure 4A-77 Waste Management Areas Pretreatment - Plan at El. -45'

DELETED- Superseded by general arrangement drawing 24590-PTF-P1-P01T-P0006 (Attachment 51, Appendix 8.4)Waste management areas are identified on the following general arrangement plan and section drawings
Section A-A, 24590-PTF-P1-P01T-P0007

Figure 4A-78 Waste Management Areas Pretreatment - Plan at El. 0'

DELETED- Superseded by general arrangement drawing -24590-PTF-P1-P01T-P0001(Attachment 51, Appendix 8.4)Waste management areas are identified on the following general arrangement plan and section drawings
General arrangement plan 24590-PTF-P1-P01T-P0001
Section A-A, 24590-PTF-P1-P01T-P0007

Figure 4A-79 Waste Management Areas Pretreatment - Plan at El. 28'

DELETED- Superseded by general arrangement drawing 24590-PTF-P1-P01T-P0002 (Attachment 51, Appendix 8.4). Waste management areas are identified on the following general arrangement plan and section drawings
Section A-A, 24590-PTF-P1-P01T-P0007

Figure 4A-80 Waste Management Areas Pretreatment - Plan at El. 56'

DELETED- Superseded by general arrangement drawing 24590-PTF-P1-P01T-P0003 (Attachment 51, Appendix 8.4)

Figure 4A-81 Waste Management Areas Pretreatment - Plan at El. 77'

DELETED- Superseded by general arrangement plan 24590-PTF-P1-P01T-P0004, and Section A-A, 24590-PTF-P1-P01T-P0007 (Attachment 51, Appendix 8.4)

Figure 4A-82 Waste Management Areas LAW - Plan at El. -21'

DELETED- Superseded by general arrangement plan – 24590-LAW-P1-P01T-P0001 (Attachment 51, Appendix 9.4) Waste management areas are identified on the following general arrangement plan and section drawings:
General arrangement plan 24590-LAW-P1-P01T-P0001
Section A-A, B-B, and C-C, 24590-LAW-P1-P01T-P0007
Section D-D, E-E, and F-F, 24590-LAW-P1-P01T-P0008
Section G-G, H-H, and J-J, 24590-LAW-P1-P01T-P0009
Section K-K and L-L, 24590-LAW-P1-P01T-P0010

Figure 4A-83 Waste Management Areas LAW - Plan at El. 22'

DELETED- Superseded by general arrangement plan – 24590-LAW-P1-P01T-P0002 (Attachment 51, Appendix 9.4) Waste management areas are identified on the following general arrangement plan and section drawings
General arrangement plan 24590-LAW-P1-P01T-P0002
Section A-A, B-B, and C-C, 24590-LAW-P1-P01T-P0007
Section D-D, E-E, and F-F, 24590-LAW-P1-P01T-P0008
Section G-G, H-H, and J-J, 24590-LAW-P1-P01T-P0009
Section K-K and L-L, 24590-LAW-P1-P01T-P0010

Figure 4A-84 Waste Management Areas LAW - Plan at El. -21'

DELETED- Superseded by general arrangement plan – 24590-LAW-P1-P01T-P0003 (Attachment 51, Appendix 9.4) Waste management areas are identified on the following general arrangement plan and section drawings (Attachment 51, Appendix 9.4):
General arrangement plan 24590-LAW-P1-P01T-P0003
Section A-A, B-B, and C-C, 24590-LAW-P1-P01T-P0007
Section D-D, E-E, and F-F, 24590-LAW-P1-P01T-P0008
Section G-G, H-H, and J-J, 24590-LAW-P1-P01T-P0009
Section K-K and L-L, 24590-LAW-P1-P01T-P0010

Figure 4A-85 Waste Management Areas LAW - Plan at El. -28'

DELETED- Superseded by general arrangement plan – 24590-LAW-P1-P01T-P0004 (Attachment 51, Appendix 9.4) Waste management areas are identified on the following general arrangement plan and section drawings (Attachment 51, Appendix 9.4):
General arrangement plan 24590-LAW-P1-P01T-P0004
Section A-A, B-B, and C-C, 24590-LAW-P1-P01T-P0007
Section D-D, E-E, and F-F, 24590-LAW-P1-P01T-P0008
Section G-G, H-H, and J-J, 24590-LAW-P1-P01T-P0009
Section K-K and L-L, 24590-LAW-P1-P01T-P0010

Figure 4A-86 Waste Management Areas HLW - Plan at El. -21'

DELETED - Superseded by general arrangement plan – 24590-HLW-P1-P01T-P0001 (Attachment 51, Appendix 10.4) Waste management areas are identified on the following general arrangement plan and section drawings (Attachment 51, Appendix 10.4):
General arrangement plan 24590-HLW-P1-P01T-P0001
Section A-A, B-B, and C-C, 24590-HLW-P1-P01T-P0008

Section D-D, E-E, and F-F, 24590-HLW-P1-P01T-P0009
Section G-G and H-H, 24590-HLW-P1-P01T-P0010
Section J-J and K-K, 24590-HLW-P1-P01T-P0011

Figure 4A-87 Waste Management Areas HLW - Plan at El. 0'

DELETED - Superseded by general arrangement plan – 24590-HLW-P1-P01T-P0002 (Attachment 51, Appendix 10.4) Waste management areas are identified on the following general arrangement plan and section drawings (Attachment 51, Appendix 10.4):
General arrangement plan 24590-HLW-P1-P01T-P0002
Section A-A, B-B, and C-C, 24590-HLW-P1-P01T-P0008
Section D-D, E-E, and F-F, 24590-HLW-P1-P01T-P0009
Section G-G and H-H, 24590-HLW-P1-P01T-P0010
Section J-J and K-K, 24590-HLW-P1-P01T-P0011

Figure 4A-88 ~~Waste Management Areas HLW - Plan at El. 11'~~

RESERVED

Figure 4A-89 Waste Management Areas HLW - Plan at El. 30'

DELETED - Superseded by general arrangement plan – 24590-HLW-P1-P01T-P0004 (Attachment 51, Appendix 10.4) Waste management areas are identified on the following general arrangement plan and section drawings (Attachment 51, Appendix 10.4):
General arrangement plan 24590-HLW-P1-P01T-P0004
Section A-A, B-B, and C-C, 24590-HLW-P1-P01T-P0008
Section D-D, E-E, and F-F, 24590-HLW-P1-P01T-P0009
Section G-G and H-H, 24590-HLW-P1-P01T-P0010
Section J-J and K-K, 24590-HLW-P1-P01T-P0011

Figures 4A-90 through 4A-106

Figures have been deleted, information is available on general arrangement drawings listed above.

Figure 4A-107 Analytical Laboratory Main Level General Arrangement

DELETED - Superseded by general arrangement plan drawings 24590-LAB-P1-60-P0008 and 24590-LAB-P1-60-P0010 (Attachment 51, Appendix 11.4):

Figure 4A-108 Analytical Laboratory Second Level General Arrangement

DELETED- Superseded by general arrangement plan drawings 24590-LAB-P1-60-P0008 and 24590-LAB-P1-60-P0010 (Attachment 51, Appendix 11.4):

Figure 4A-109 Analytical Laboratory Hot Cell General Arrangement

DELETED- Superseded by general arrangement plan drawings 24590-LAB-P1-60-P0008 and 24590-LAB-P1-60-P0010 (Attachment 51, Appendix 11.4):

Figure 4A-110 Analytical Laboratory Basement Level General Arrangement (Tank Systems)

DELETED- Superseded by general arrangement plan drawings 24590-LAB-P1-60-P0007 and 24590-LAB-P1-60-P0010 (Attachment 51, Appendix 11.4):

Figure 4A-111 Analytical Laboratory Hot Cell Mechanical Systems

DELETED- Superseded by process flow diagram 24590-LAB-M5-V17T-P0029 (Attachment 51, Appendix 11.1):

Figure 4A-112 Analytical Laboratory Simplified Process Flow

DELETED- Superseded by process flow diagram 24590-LAB-M5-V17T-P0029 (Attachment 51, Appendix 11.1):

Figure 4A-113 Analytical Laboratory Tank System

DELETED- Superseded by process flow diagram 24590-LAB-M5-V17T-P0029 (Attachment 51, Appendix 11.1):

Figure 4A-114 ~~Analytical Laboratory Main Floor Ventilation~~

RESERVED

Figure 4A-115 Analytical Laboratory Second Floor Ventilation

DELETED

Figure 4A-116 Analytical Laboratory Simplified HVAC Description

DELETED

Figure 4A-117 Analytical Laboratory Basement Level Ventilation

DELETED

Figure 4A-118 Schematic of an Example IHLW Container and Label

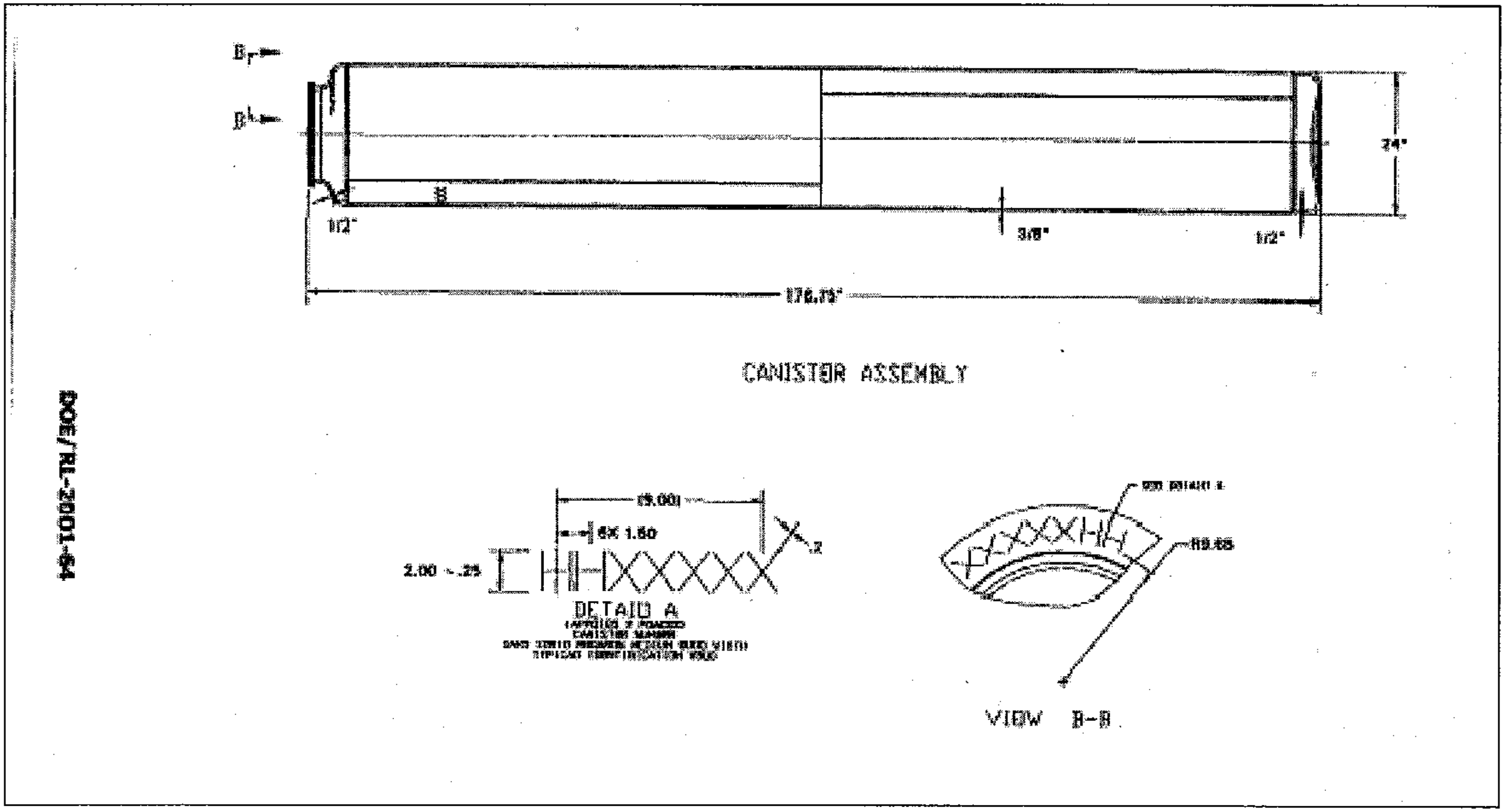


Figure 4A-119 Schematic of an Example ILAW Container and Label

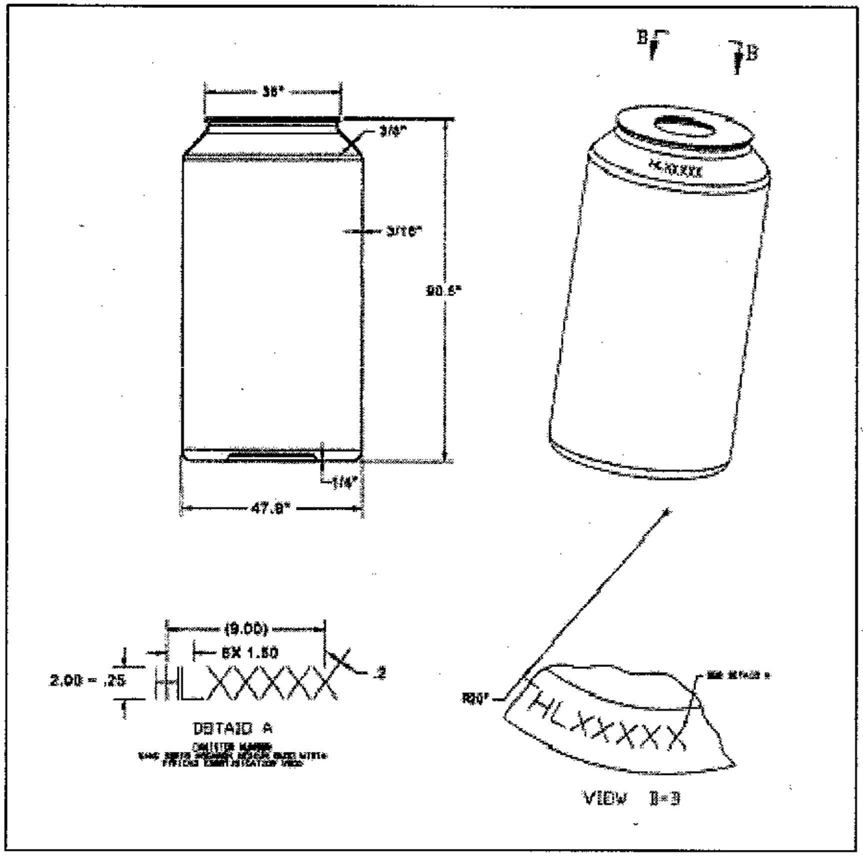


Figure 4A-120 Typical Arrangement of a Reverse Flow Diverter

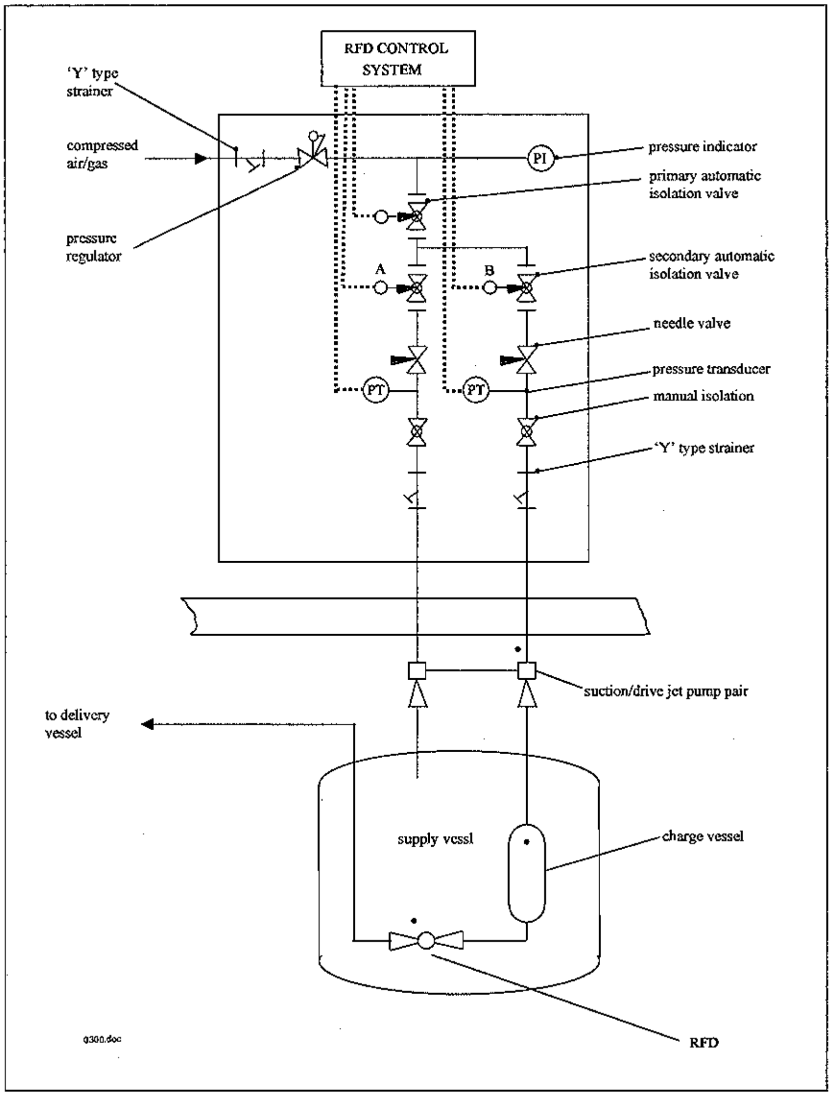


Figure 4A-121 Basic Reverse Flow Diverter Design

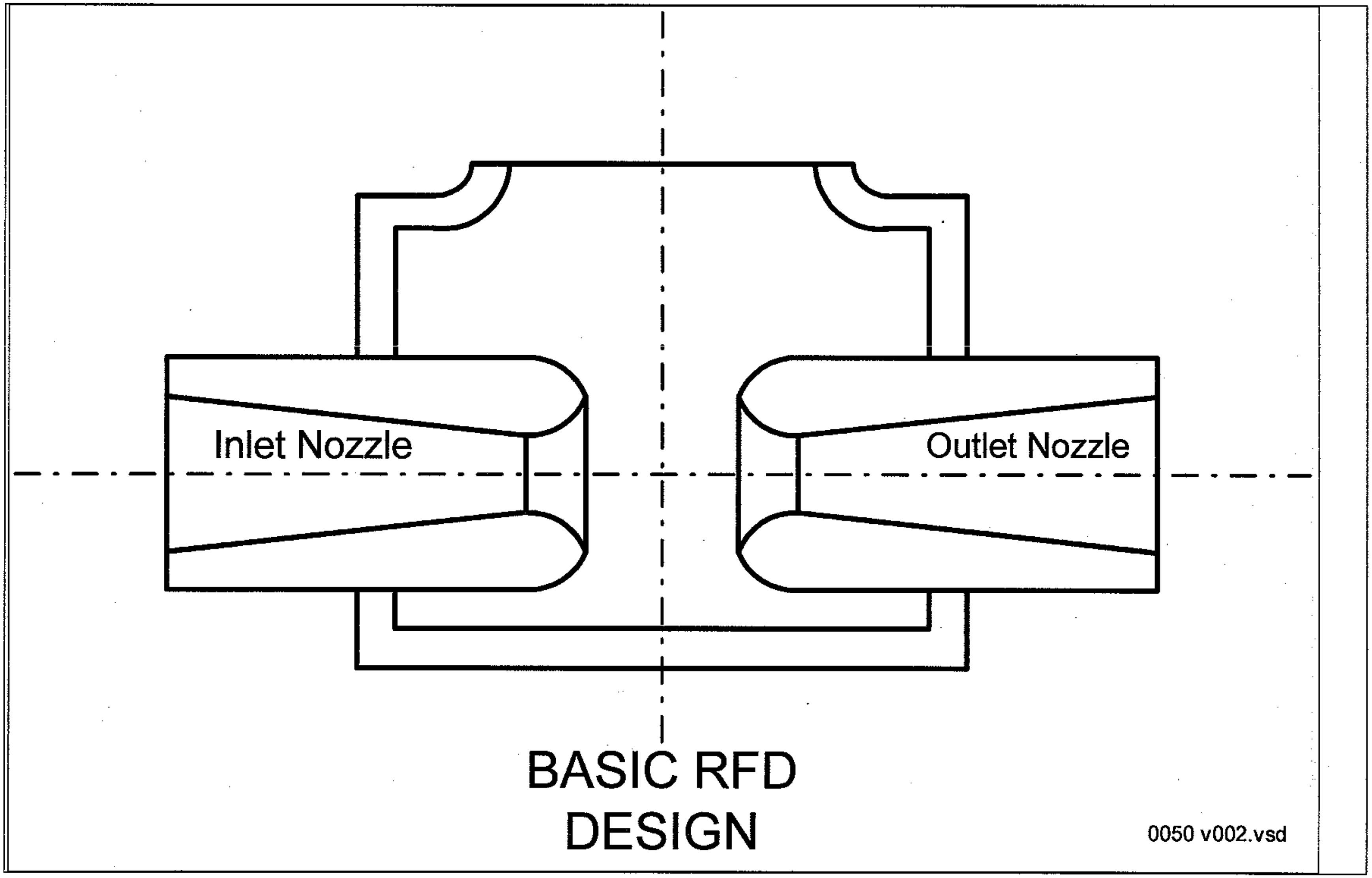


Figure 4A-122 Typical Arrangement of a Steam Ejector System

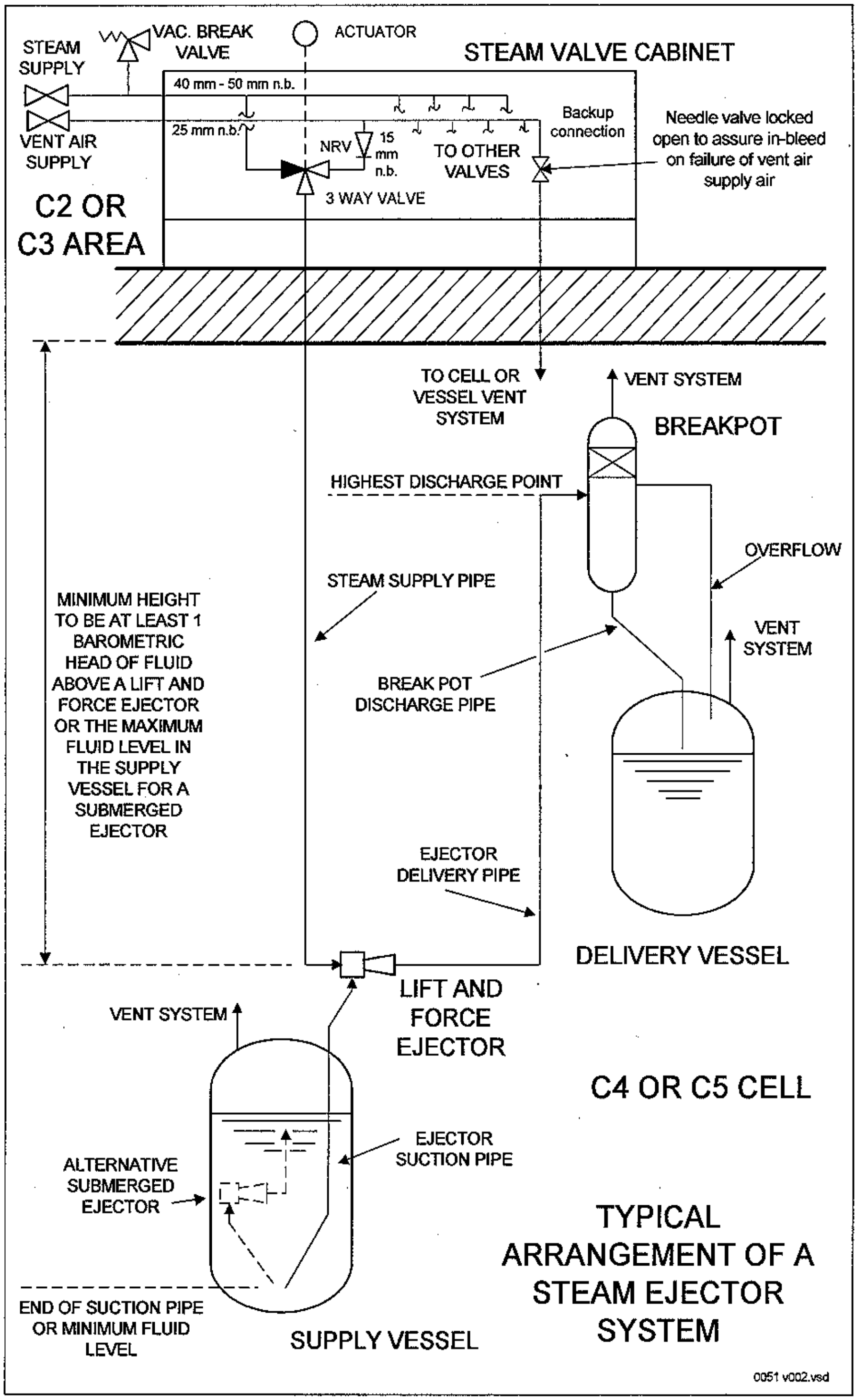


Figure 4A-123 Typical Seal Pot Arrangement

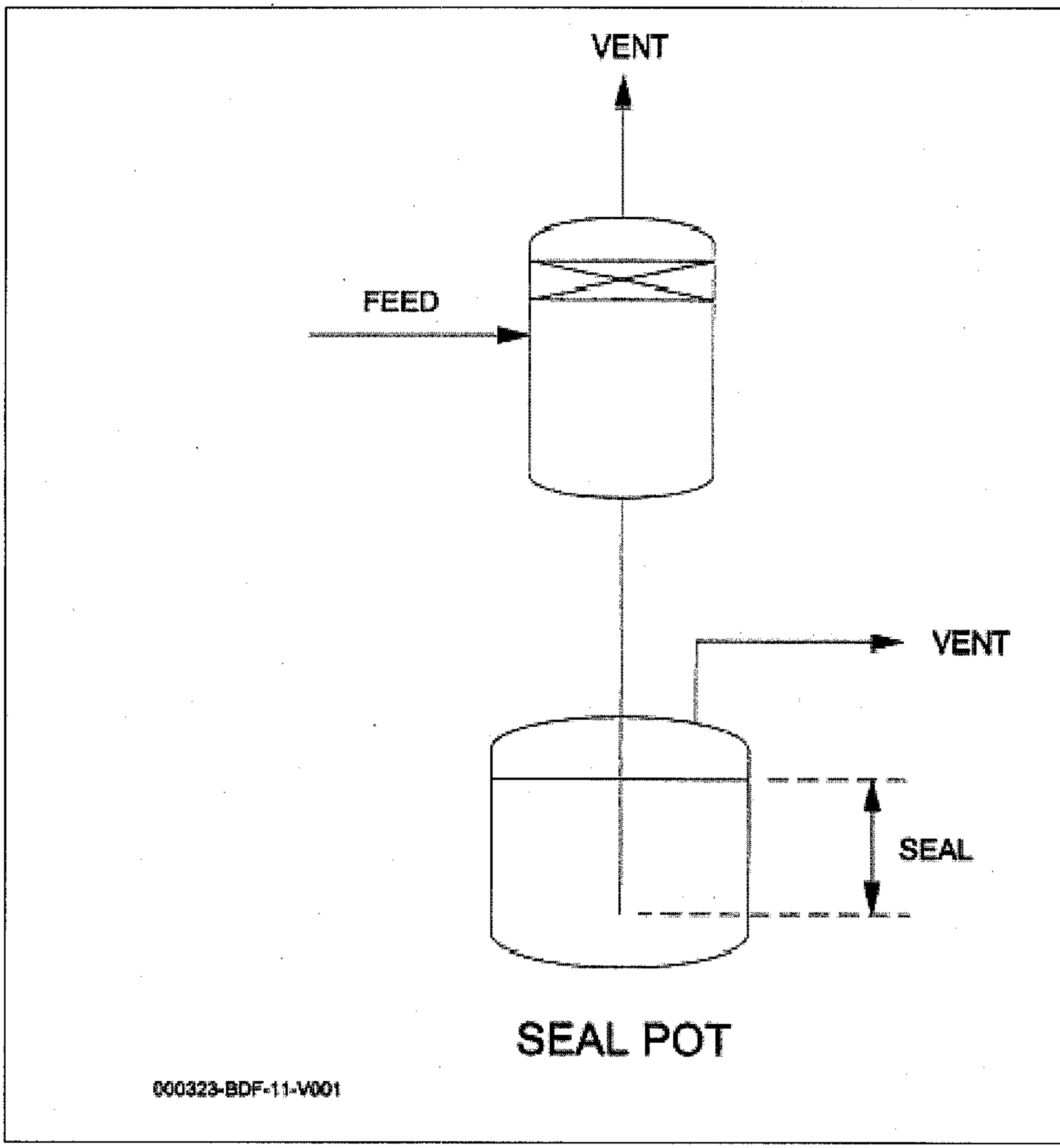


Figure 4A-124 Typical Breakpot Arrangement

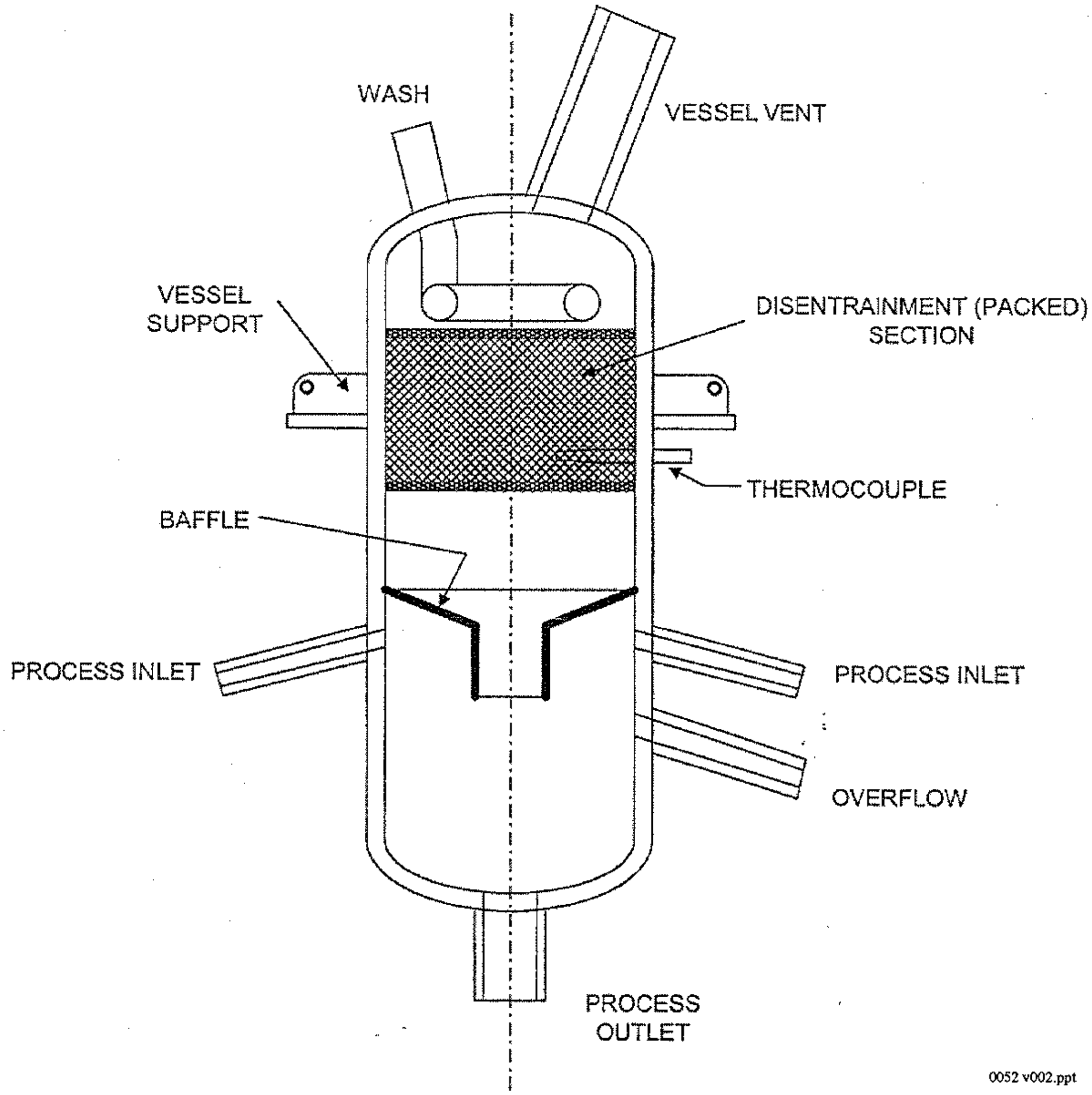


Figure 4A-125 Typical Dry (Type I) Sump

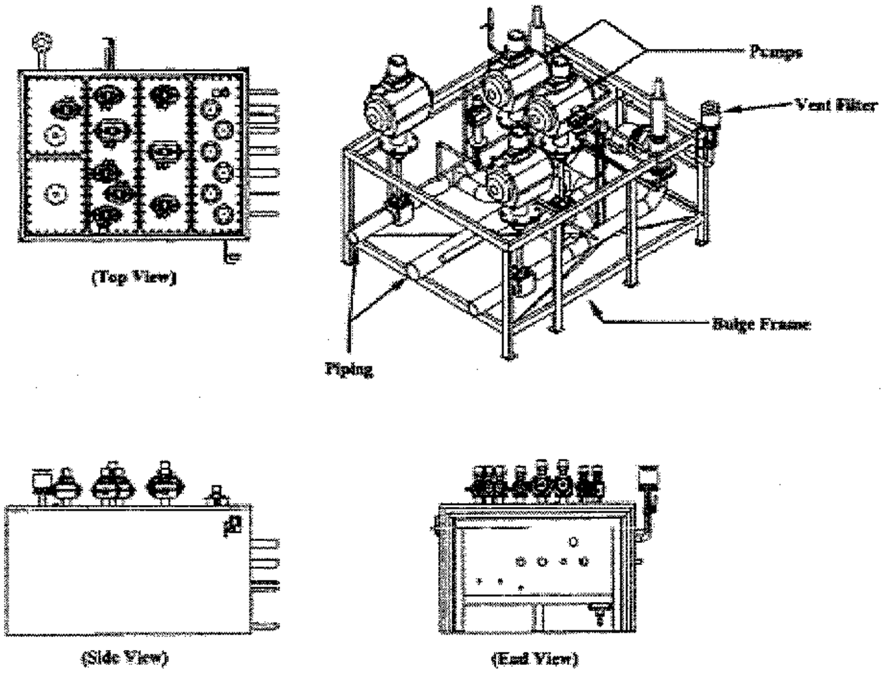
DELETED- Superseded by:

24590-WTP-PER-CSA-02-001, *Secondary Containment Design* (Attachment 51, Appendix 7.5)
24590-PTF-PER-M-02-006, *Sump Data for PT Facility* (Attachment 51, Appendix 8.5)
24590-PTF-PER-M-03-002, *Sump Data for PT Facility* (Attachment 51, Appendix 8.5)
24590-PTF-PER-M-04-004, *Sump Data for PT Facility* (Attachment 51, Appendix 8.5)
24590-PTF-PER-M-04-002, *Sump Data for PT Facility* (Attachment 51, Appendix 8.5)
24590-LAW-PER-M-02-001, *LAW Facility Sump Data* (Attachment 51, Appendix 9.5)
24590-HLW-PER-M-02-001, *HLW Facility Sump Data* (Attachment 51, Appendix 10.5)
24590-LAB-PER-M-02-002, *Sump Data for LAB Facility* (Attachment 51, Appendix 11.5)

~~**Figure 4A-126 Typical Wet (Type II) Sump**~~

DELETED- the WTP will not contain wet (Type II) sumps

Figure 4A-127 Typical Bulge Configuration



Chapter 6.0

Procedures to Prevent Hazards

This page intentionally left blank.

CHAPTER 6.0
PROCEDURES TO PREVENT HAZARDS

Contents

This page intentionally left blank.

6.0 PROCEDURES TO PREVENT HAZARDS [F]

This chapter addresses hazard prevention at the River Protection Project - Waste Treatment Plant (WTP). It covers the following topics: security; preparedness and prevention requirements; preventive procedures, structures, and equipment; and prevention of reaction of the ignitable, reactive, and incompatible waste at the WTP.

Information is presented in two formats: narrative and table. See Appendix 6A for inspection tables.

6.1 SECURITY [F-1]

This section describes WTP security procedures and equipment. Hanford Site security measures are discussed in the *Hanford Facility Dangerous Waste Permit Application, General Information Portion* (DOE-RL 1998).

6.1.1 Security Procedures and Equipment [F-1a]

The following sections describe the barrier and warning signs that support security and control access to the WTP.

6.1.1.1 24-Hour Surveillance System

The entire Hanford Site is a controlled-access area. For surveillance information, refer to the *Hanford Facility Dangerous Waste Permit Application, General Information Portion* (DOE-RL 1998).

6.1.1.2 Barrier and Means to Control Entry

The WTP will use two fences, one around the facility's perimeter, and a second inner fence that controls access to dangerous waste management areas. The inner fence will be of sufficient height and construction to prevent people, livestock, and wildlife accidental access to the WTP. Vehicle access to the WTP administration building will be through a normally open gate in the perimeter fence. Visitors must check in at the administration building and will be escorted as required.

WTP personnel entry to the process areas will be through a controlled pedestrian gate. Service vehicles delivering supplies will enter process areas through a controlled gate. See the topographic map in Chapter 2.0 of this Dangerous Waste Permit Application (DWPA), for further information regarding barriers and vehicular access.

6.1.1.3 Warning Signs [F-1a(2)]

Warning signs, written in English, stating, "DANGER - UNAUTHORIZED PERSONNEL KEEP OUT" (or an equivalent legend), legible from a distance of at least 25 feet, and visible from any angle of approach to the WTP. These warning signs will be posted in locations such as:

- Around the perimeter of the WTP fenced areas
- On each entrance, gate, and other access points to portions of the WTP facility actively managing dangerous waste
- On entrances to other enclosed areas within the plant that contain dangerous or mixed waste

Points of access into waste handling and storage areas will have clearly marked warnings for radiation exposure and corrosivity, the major health risks associated with the waste. Access points into these areas will be strictly controlled. In addition, signs will be posted at the main site access entrance, instructing visitors to report to the WTP administration building to gain access to the WTP (WAC 173-303-310 (2) (a)).

6.1.2 Waiver [F-1b]

No waivers of the security procedures and equipment requirements for the WTP are requested.

6.2 INSPECTION PLAN [F-2]

The following sections describe the WTP dangerous waste inspection plan. The WTP will use a graded approach to preventing and detecting malfunctions, deterioration, operator errors, and discharges that will range from daily inspections to integrity assessments. This graded approach is comprised of activities that, at a minimum, will meet the inspection requirements and will include more precautions for equipment at higher risk of failure. Monitoring via instrumentation will be used to perform remote inspections in areas of high radioactivity, including the pretreatment areas, the LAW vitrification area, and the HLW vitrification area. Due to the radioactive nature of the waste and consistent with ALARA principles, monitoring by instrumentation will be the primary means of fulfilling the inspection requirements in these areas. The WTP also will use cameras, windows, process control, function checks, and preventive maintenance to comply with inspection requirements.

Example inspection schedules, which are part of the inspection plan, are presented as tables in Appendix 6A. Each table addresses a particular dangerous waste management unit, or group of units, such as tanks. Within each management unit table, the inspections are presented by system, and are further broken down by individual component in each system.

6.2.1 General Inspection Requirements [F-2a]

This section describes general, WTP-wide inspection requirements used to help prevent, detect, or respond to environmental or human health hazards related to dangerous waste handling, treatment, and storage at the WTP. The inspection schedules are provided in Table 6A-1.

Instruments, such as those used for overfill detection, will be connected to the Process Control System (PCS). The PCS will be the computer system that continuously monitors the instruments' data. Should the PCS detect an abnormal reading, control personnel will be alerted (in real time) by alarm in the control room. The monitoring system will provide trending of selected monitoring data, graphics, and equipment summary displays. The WTP will use a maintenance management system to plan and track preventive maintenance activities and function testing at the WTP. Other methods of performing inspections at the WTP will be visual where safe and effective to do so.

6.2.1.1 Items to be Inspected [F2a(1)]

The WTP inspection plan will include specific inspection schedules that meet the requirements. In Appendix 6A are example inspection schedules of the types of items to be inspected. The following are listed in the inspection schedule tables:

- General inspections for safety and emergency equipment, security, and preparedness and prevention
- Tank systems
- Containers
- Container storage areas
- Miscellaneous treatment units
- Containment building areas

6.2.1.2 Types of Problems to Look for During Inspections [F-2a(2)]

The example inspection tables in Appendix 6A include a column titled "inspections". This column specifies the type of inspection activities to be performed (such as verifying the operability of equipment and problems to look for) for each inspected item.

6.2.1.3 Frequency of Inspections [F-2a(3)]

In the example inspection tables in Appendix 6A, the column titled "frequency" provides the frequency of inspection for each item. Inspection frequencies were developed using a graded approach that will be finalized prior to the start of operations, and are based on the following:

- Regulatory requirements where specified
- Rate of possible deterioration of equipment
- Probability of a release to the environment
- Potential to cause harm to human health and the environment
- Manufacturer's specifications
- Integrity assessments of tank systems
- Operating experience and knowledge

6.2.1.4 Schedule Location [F-2a(4)]

Controlled copies of the inspection plan will be kept at the WTP facility. The project document control manager, or equivalent, will be responsible for ensuring that controlled copies of the inspection plan are kept current when revisions to the inspection plan are made.

6.2.1.5 Employee Positions Responsible for Conducting Inspections [F-2a(5)]

Personnel performing dangerous waste inspections will have the appropriate facility-specific training, as defined in the *River Protection Project - Waste Treatment Plant Dangerous Waste Training Plan* (Chapter 8.0). The training program will identify the individuals qualified to perform dangerous waste-related inspections. There will not be specific job positions where all individuals holding that position qualify to perform dangerous waste inspections.

6.2.2 Inspection Log [F-2b]

Hand written records of inspections (the inspection log) will include the date and time of inspection; the legible, printed name and hand written signature of the inspector; a notation of the observations made; and an account of spills or discharges. Most of the daily inspections will be recorded as part of the process control data recording system and will therefore be fully retrievable and auditable. Repairs, and remedial or corrective actions needed, will become part of the WTP's corrective action system and the date and nature of repairs or remedial actions taken will be recorded in the inspection log. The inspection log will be stored in the WTP operating record for at least 5 years from the date of inspection.

Electronic media, rather than hard copies, will be used for recording inspections in the WTP, where it is sensible, cost-effective, and/or consistent with ALARA practices. Electronic inspection records normally will be readily retrievable. Whenever possible, dangerous waste inspection requirements will be incorporated into the procedures and operating documentation records for normal operations. The procedures and operating requirements that satisfy compliance with WAC 173-303 (including inspection requirements) will be identified so that they are distinguishable within the larger universe of facility operational requirements.

6.2.3 Schedule for Remedial Action for Problems Revealed [F-2c]

Remedial action will be taken as soon as practicable by facility management to implement the *River Protection Project-Waste Treatment Plant Emergency Response Plan* (ERP) (Chapter 7.0), if an inspection identifies an imminent hazard to human health or the environment.

An investigation will begin within 24 hours, upon detection of unplanned release in the plant. Depending upon the volume of the release and the characterization of the released contents, the cleanup may be completed within 24 hours, or as soon as practicable, after completion of the initial investigation period. However, the time required to cleanup the release will depend on factors such as analytical turnaround time, radioactivity, and volume.

When inspections reveal problems that do not present an immediate threat to human health or the environment, nor result in a release of hazardous material (cracks in secondary containment coatings, nonfunctioning instrumentation, and labeling errors or omissions), such inspection findings will be logged and response actions scheduled and tracked within 24 hours as corrective actions. The following steps are used, in general, to resolve corrective actions:

- Problem identification and documentation

- Classification
- Cause analysis
- Corrective action
- Follow-up investigation

Non-emergency corrective actions will be completed within 24 hours if possible; however, additional response time may be required because of the radioactive component of the waste being managed at the WTP.

The precise title of the personnel that will be responsible for authorizing such corrective actions has not been decided; however, the position will be one equivalent to a shift operations manager.

6.2.4 Specific Process or Waste Type Inspection Requirements [F-2d]

The following sections describe specific process inspection requirements.

6.2.4.1 Container Inspections [F-2d(1)]

The WTP will store immobilized low-activity waste (ILAW), immobilized high-level waste (IHLW), and secondary dangerous and mixed waste in containers. Secondary waste refers to newly generated waste (or a waste by-product from treating the Hanford tank waste) that designates as dangerous waste or mixed waste. Secondary waste also will be generated by the laboratory activities, from maintenance waste, and failed contaminated equipment. The location and design description of the containers and their storage areas are included in Chapter 4. Inspections of container storage areas will be performed weekly when waste is in the storage areas. Table 6A-2 provides examples of container and container storage area inspection schedules for ILAW, IHLW, and secondary waste.

<u>Immobilized Low-Activity and High-Level Waste Containers</u>
Filled ILAW and IHLW containers will be radioactive and thus, inspections must be performed remotely. Therefore, in lieu of conventional container inspections while the containers are in storage, each container will be inspected before and after filling, and when it is moved into and out of the ILAW and IHLW container storage areas. The canisters will not contain free liquids, will be chemically and physically stable (not ignitable or reactive), and will be welded closed. The IHLW containers will be placed in special racks inside the storage areas that will prevent them from toppling. The immobilized waste containers and storage areas are described in Chapter 4.

The WTP will inspect the ILAW and IHLW container storage areas, when they are in use, weekly by remote means. These remotely managed storage areas do not include thirty-inch aisle spacing. The example inspection schedules (Appendix 6A) specify the problems for which to look and how inspections are performed.

The dangerous waste container labeling requirements will be met by using a unique alphanumeric identifier that will be welded to each container. Deterioration of the identifier is not expected due to the permanent nature of these markings and provisions for subsequent handling that will safeguard against damage to the containers and the identifying marks.

Using the identification on each container, a tracking system will record key movements of each immobilized waste container through the facility. Information about the waste canister tracking system is in Chapter 4. For each container of ILAW and IHLW produced, the system will track the following:

- The location of each container in process and storage areas
- The date that waste was first placed in the container
- The date the container was shipped from the facility, and its destination
- The nature of waste in the container, including dangerous waste designation codes, and land disposal restriction requirements

Secondary and Miscellaneous Waste in Containers
Example inspection schedules for secondary dangerous waste and mixed waste container storage areas are given in Table 6A-2.

6.2.4.2 Tank Systems Inspections and Corrective Actions [F-2d(2)(a)]

A description of the tank systems, and their safety and interlock controls, at the WTP can be found in Chapter 4. Examples of tank system inspections, inspection frequencies, and problems to look for are given in Table 6A-3. Following is a brief discussion of the tank system inspections.

Inspection procedures and the complete inspection schedule will be available at the WTP prior to starting operation. Each tank, or grouping of identical tanks, is shown as a line item in the inspection schedule tables. Each inspection item includes a description of problems to look for, and the frequency of inspection.

Cathodic Protection
Cathodic protection systems will be used to prevent or mitigate metal corrosion on underground dangerous waste transfer lines where the outermost pipes are in contact with the soil. The cathodic protection systems are described in Chapter 4. Example inspection schedules for cathodic protection systems and sources of impressed current are in Table 6A-4.

Tank Integrity Assessments
A periodic integrity assessment approach will be developed for the WTP waste tanks to ensure that the tanks' systems remain fit-for-use. The schedule for performing periodic integrity assessments will be developed during the new tank design assessment discussed in Appendix 4B of this application.

6.2.4.3 Tank Systems – Corrective Actions [F-2d(2)(b)]

Operating procedures describing corrective actions will be developed prior to operations.

6.2.4.4 Storage of Ignitable or Reactive Wastes [F-2d(3)]

Dangerous waste codes assigned to the waste in the *Double-Shell Tank System Dangerous Waste Part A Permit Application* (DOE-RL 1996) apply to the waste feed the WTP will receive. The waste feed will include the waste codes for ignitability (D001) and reactivity (D003), but the waste is not expected to exhibit the characteristics listed in WAC 173-303-090 for these two waste codes. Based on past process knowledge that includes the age, temperature, history, and chemical composition of the waste feed stored in the DST system, the waste codes D001 and D003 will be removed by the WTP. See the Waste Analysis Plan (Appendix 3A of this application) for specific information on the waste codes and their removal.

Consequently, only the waste feed receipt tanks will be inspected for tanks storing ignitable and reactive waste. The remainder of the process tanks will not contain ignitable or reactive waste. Ignitable or reactive secondary waste may be stored in tanks or containers at the WTP. Annual inspections of all areas managing D001 and D003 waste will be conducted by personnel familiar with the Uniform Fire Code, or in the presence of the local, state, or federal fire marshal. Inspections will be entered into the WTP operating record and maintained at the WTP for 5 years (see Table 6A-5 for the inspection schedule for ignitable or reactive wastes).

6.2.4.5 Air Emissions Control and Detection - Inspections, Monitoring, and Corrective Actions (F-2d[4] and [4][a])

Air Emissions from Process Vents (Subpart AA) [F-2d(4)(a)]
The WTP does not use any of the regulated devices or processes listed; therefore, the WTP will not be subject to regulation under Subpart AA (40 CFR 264).

Air Emission Standards for Equipment Leaks (Subpart BB) [F-2d(4)(b)]
WAC 173-303-691 and Subpart BB (40 CFR 264) applies to equipment that contains or contacts hazardous wastes with organic concentrations of at least 10 percent by weight. This provision will not apply to the facility because the WTP will not accept or treat wastes with organic concentrations at or above 10 percent by weight. Compliance with this provision will be documented through analyses of verification samples, as described in the Waste Analysis Plan.

Air Emission Standards for Tanks, Impoundments, and Containers (Subpart CC) [F-2d(4)(c)]
The regulations specified under WAC 173-303-692 and 40 CFR Part 264 Subpart CC, incorporated by reference, do not apply to the WTP mixed waste tank systems and containers. These tanks and containers qualify as waste management units that are "used solely for the management of radioactive dangerous waste in accordance with all applicable regulations under the authority of the Atomic Energy Act and the Nuclear Waste Policy Act" and are excluded under WAC 173-303(1)(b)(vi). Containers or tanks bearing nonradioactive, dangerous waste, such as maintenance and laboratory waste, that are not excluded under WAC 173-303-692(1)(b)(ii) or 40 CFR 264.1082(c), will comply with the container and tank standards specified under 40 CFR part 264 Subpart CC.

6.2.4.6 Miscellaneous Unit Inspections

The WTP melters are miscellaneous units under WAC 173-303-680. Remote inspections and monitoring will be performed by instrumentation that will be supplemented by camera(s) and viewing through shielded windows because of the high levels of radiation in process areas. Inspections will verify the integrity of melter equipment and detect malfunctions, deterioration, leaks, or operator errors that have the potential to release dangerous waste into the facility or the environment. The miscellaneous unit inspection schedule is provided in Table 6A-6.

6.2.4.7 Containment Building Inspection

Containment buildings will be inspected for items listed in Table 6A-7. The WTP containment building example inspection schedules include the requirements from 40 CFR 264 Subpart DD. Example inspection schedules for tank systems and miscellaneous units located within containment buildings are in Tables 6A-3 and Table 6A-7.

6.2.4.8 Waste Pile Inspection [F-2d(5)]

Operation of the WTP does not involve the placement of mixed waste in piles. Therefore, this section is not applicable to the WTP.

6.2.4.9 Surface Impoundment Inspection [F-2d(6)]

Operation of the WTP does not involve the placement of mixed waste in a surface impoundment. Therefore, this section is not applicable to the WTP.

6.2.4.10 Incinerator Inspection [F-2d(7)]

Operation of the WTP does not involve using a waste incinerator. Therefore, this section is not applicable to the WTP.

6.2.4.11 Landfill Inspection [F-2d(8)]

Operation of the WTP does not involve the placement of mixed waste in a landfill. Therefore, this section is not applicable to the WTP.

6.2.4.12 Land Treatment Facility Inspection [F-2d(9)]

Operation of the WTP does not involve the land treatment of mixed waste. Therefore, this section is not applicable to the WTP.

6.3 PREPAREDNESS AND PREVENTION REQUIREMENTS [F-3]

The following sections document the preparedness and prevention measures to be taken at the WTP.

6.3.1 Equipment Requirements [F-3a]

The following sections describe internal and external communications, and emergency equipment required and located at WTP.

6.3.1.1 Internal Communications [F-3a(1)]

The onsite communication system at the WTP provides immediate emergency information to facility personnel, and includes public address and alarm systems. The public address system provides for verbal instruction and communication to WTP personnel. The internal communication system also notifies personnel of the following local or plant-wide alarm-activated emergency situations: building evacuations, fire or explosion, radioactive discharges, and high airborne contamination. The ERP provides additional information on the response activities.

6.3.1.2 External Communications [F-3a(2)]

The WTP is equipped with devices for summoning emergency assistance from the Hanford Fire Department, the Hanford Hazardous Materials Response Team, or local emergency response teams, as necessary. External communication will be via a telephone communication system. Telephones will be available for staff use at numerous locations throughout the facility. Under no circumstances will only one staff member be at the WTP site. In addition, the current Hanford communication system will be utilized as described in the *Hanford Emergency Management Plan* (DOE/RL-94-02) ~~*Hanford Emergency Management Plan* (DOE/RL 1999)~~, Section 5.2.

6.3.1.3 Emergency Equipment [F-3a(3)]

Portable fire extinguishers, fire control equipment, spill control equipment, and decontamination equipment are available to personnel at the WTP. A list of emergency and decontamination equipment is provided in the ERP.

6.3.1.4 Water for Fire Control [F-3a(4)]

The primary water supply for fire protection will be provided from the 200 East Area raw water distribution system. The fire water supply system comprises two water storage tanks designed to National Fire Protection Association (NFPA) 22, *Standard for Water Tanks for Private Fire Protection* (NFPA 1998); and Factory Mutual (FM) Data Sheet 3-2, *Water Tanks for Fire Protection* (FM 2001a). Each water storage tank will be capable of supplying fire-water for a minimum of two hours at the maximum anticipated demand.

The pumping system is being designed to NFPA 20, *Standard for the Installation of Stationary Pumps for Fire Protection* (NFPA 1999a), and Factory Mutual Data Sheet 3-7N, *Stationary Pumps for Fire Protection* (FM 2001b). A fire pump will be installed and connected to each water storage tank. Each pump will be capable of providing the maximum system demand and will be connected to the underground distribution system in a manner that will prevent single failure from disabling both water supplies.

The underground distribution piping and valving will be designed and installed according to NFPA 24, *Standard for Installation of Private Fire Service Mains and Their Appurtenances*

(NFPA 1995); and Factory Mutual Data Sheet 3-10, *Installation and Maintenance of Private Fire Service Mains and Their Appurtenances* (FM 2000).

The distribution system in the various buildings and structures are being designed following the various appropriate codes and standards that apply to their specific occupancy. The standards include NFPA 13, *Standard for the Installation of Sprinkler Systems* (NFPA 1999b); NFPA 14, *Standard for the Installation of Standpipe, private Hydrant, and Hose Systems* (NFPA 2000); NFPA 15, *Standard for Water Spray Fixed Systems for Fire Protection* (NFPA 1996); and the appropriate Factory Mutual standards, as required.

6.3.2 Aisle Space Requirement [F-3b]

Sufficient aisle space will be maintained throughout the facility buildings to allow access of personnel and equipment responding to fires, spills, or other emergencies.

Alternate aisle space for IHLW and ILAW container storage area is explained in Chapter 4. Secondary wastes stored in container storage areas will meet the 30-inch minimum aisle space requirement.

6.4 PREVENTIVE PROCEDURES, STRUCTURES, AND EQUIPMENT [F-4]

The following sections describe preventive procedures, structures, and equipment. Refer to Chapter 4 for additional information on feed transfer piping and tank overfill protection structures, equipment, and instrumentation.

6.4.1 Unloading/Loading Operations [F-4a]

Waste feed to be treated at the WTP will be received from the DST system staging tank through a pipeline with secondary containment; leak detection; and cathodic protection, where transfer lines are in contact with the soil. The WTP will not receive waste for treatment in containers.

The filled ILAW and IHLW containers and canisters will be loaded for transport using special shielding and heavy lifting equipment. The immobilized waste will present no hazards from spills, leaks, run-off, or chemical exposures to personnel from the dangerous waste constituents because the waste will be solid (contain no free liquids) and the containers will be permanently sealed.

Containers of secondary waste bound for transport to another TSD will be packaged according to the federal, state, and local regulations in place at the time. (Because the WTP will not begin generating secondary waste for several years, information such as the procedures, structures, and equipment is not yet available.)

6.4.2 Runoff [F-4b]

Waste stored and treated inside the plants can not contact precipitation and therefore, can not contaminate runoff from WTP structures, nor can precipitation enter secondary containment for the process and storage areas within the plants. Additionally, the process condensate vessels located outside the Pretreatment Plant will be surrounded by a concrete berm lined with a protective coating for secondary containment. The secondary containment will collect and hold leaks and precipitation until the liquid can be removed. There will be no contaminated runoff from the outside tanks.

6.4.3 Contamination of Water Supplies [F-4c]

The active portions of the facility are being designed with robust structural features such as thick, reinforced concrete floors and walls; secondary containment (lined with stainless steel or other protective coating); and off-gas treatment systems. The structural features alone are designed to prevent waste feed from contacting the environment. Operation of the WTP is also intended to prevent a release of waste to the environment. The WTP design, construction, and operation will prevent waste feed and secondary waste from contaminating groundwater and drinking water supplies (see Chapter 4 for structural design information).

Raw and potable water will be supplied to the WTP via separate underground lines from the 200 East Area water treatment and distribution system. Backflow preventers or interconnection breaks ensure that in the event water is contaminated at the WTP, the water cannot flow back into the water systems' sources. There will be no connections between potable water and raw water systems, or between the potable water system and piping that will contain mixed waste.

6.4.4 Equipment and Power Failures [F-4d]

Should there be a partial or total loss of electrical power to the WTP, automatic measures ensure the plant is in a safe operational configuration. (Safe operational configuration is defined as a shutdown to minimal operations that will prevent releases and prevent unnecessary damage to the equipment.)

The emergency power system will consist of three 4.16kV medium voltage, automatically controlled emergency diesel generators connected to three separate 4.16kV emergency switchgears. Upon loss of power the emergency power system generators will automatically start. The emergency diesel generators are capable of starting, accelerating, and being loaded with the design load in a specified time limit (under 10 seconds per National Electrical Code (NEC) article 700 [Sec 3.2.2 (7)][NFPA 1999c]). The emergency power system will be connected to essential loads in order to ensure only a short-term power interruption for those loads designated as essential.

Standby power will be provided by three 13.8kV medium voltage, standby diesel generators. The standby diesel generators are started manually or automatically in the event of a prolonged loss of offsite power. This source is primarily associated with the LAW and HLW melters. Critical indications and controls are backed up by uninterruptible power supplies and batteries. The plant will remain in a safe condition during loss of electrical power.

Egress lighting will consist of self-contained fixtures with battery packs and charging systems. These lighting systems will be located in stairways, exit routes and fire alarm stations and will come on automatically upon loss of normal power to the fixture. A selected part of the normal lighting will operate as essential lighting, and will provide a minimum level of illumination throughout the plant to aid in restoring the plant to normal operation. Essential lighting will be powered by the emergency power system and will be available after an offsite power loss, following a delay required to start the emergency power supply diesel generators and for the generators to pick up the essential loads.

Selected instrumentation and controls will be unaffected by a loss of offsite power, since many of these instruments and controls will be powered by uninterruptible power supply systems. The uninterruptible power supply systems will be battery backed, and the battery chargers will be connected to the emergency power supply. Emergency lighting, such as in the central control room, will be connected to an uninterruptible power supply system. Radiation monitoring using continuous air monitors and area radiation monitors are also powered by these systems and continue operating during power failure.

6.4.5 Personal Protection Equipment [F-4e]

Facility design, operating practices, and administrative controls are the primary means of preventing personnel exposure to dangerous and mixed waste. The following practices, structures, and equipment are intended to minimize personnel exposure to chemicals, radioactive contamination, and radiation exposure:

- Remote operation and viewing
- Active ventilation that moves air from uncontaminated zones to progressively more contaminated zones
- Waste cutoff systems that automatically keep operations in a safe condition
- Secondary containment for liquids
- Offices, control rooms, change rooms, and lunchrooms that are situated to minimize casual exposure of personnel

Before the start of an operation that might expose employees to the risk of injury or illness, a review of the operation will be performed to ensure the appropriate protective gear is selected. Personnel will be instructed to wear personal protective equipment in accordance with training, posting, and instructions. The inspection schedule for personal protective equipment is found in Table 6A-1; however, the specific items listed as personal protective equipment will be in the ERP (Chapter 7.0) and not duplicated here.

6.4.6 Prevent Releases to the Atmosphere [WAC 173-303-806(4)(a)(viii)(F)]

The WTP off-gas treatment systems are the primary means of preventing contaminated releases to the atmosphere. The procedures, structures, and equipment used in these systems will be described in Chapter 4.

6.5 PREVENTION OF REACTION OF IGNITABLE, REACTIVE, AND/OR INCOMPATIBLE WASTE [F-5]

The WTP will receive waste feed that is designated as ignitable or reactive; the WTP may store, in containers, secondary waste that is designated as ignitable, reactive, or incompatible (see Chapter 3 and Waste Analysis Plan, Appendix 3A of this application).

Process knowledge, administrative controls, and the active ventilation system prevent the formation or release of ignitable vapors that could harm human health or the environment.

This page intentionally left blank.

Appendix 6A
Inspection Schedules

APPENDIX 6A
INSPECTION SCHEDULES

Contents

Tables

INSPECTION SCHEDULES

This section provides example WTP inspection schedules showing inspection frequencies and what to look for. These example inspection schedules list the monitoring equipment, safety and emergency equipment, security devices, preparedness and prevention equipment, and operating and structural equipment that help prevent, detect, or respond to environmental or human health hazards related to mixed and dangerous waste. A copy of the current and complete inspection schedules will be retained at the WTP or other approved locations.

Table 6A-1 contains examples of the general inspection requirements. The remaining tables are organized by type of waste management unit. Following is a list of tables and their locations included in this Appendix.

1

Table 6A-1 Example WTP General Inspection Schedule

Component Name	Inspection	Frequency
Security Devices		
WTP inner fence	Check for damaged fencing	Monthly
Posted warning signs (see section 6.1.1.3) that say: "DANGER - UNAUTHORIZED PERSONNEL KEEP OUT" (or equivalent)	Verify signs are present, legible from a distance of 25 ft, and visible; ensure buildings or rooms containing dangerous or mixed waste are posted	Monthly
Points of access to active portions turnstiles, doors, and/or magnetic encoded bar readers	Verify operability	Monthly
Emergency Preparedness Equipment		
Safety showers and eyewash stations	Verify operability and sufficient pressure	~~Weekly~~ At least every seven days
Automatic fire suppression system(s)	Verify operability	Annually
Portable fire extinguishers (all types)	Check for adequate charge	Monthly
Emergency lighting	Test operability	Monthly
Spill kit and spill control equipment	Verify contents complete	Quarterly
Emergency sirens and alarms	Verify operability	Monthly
Voice paging system (pagers or PA system)	Verify operability	Monthly
Crash alarm telephone system	Verify operability	Monthly
Emergency telephones	Verify operability	Monthly
Personal protective clothing and equipment	Ensure supplies meet ERP listing and requirements	Quarterly
Power Supply Inspections		
Emergency uninterruptible power supply system(s)	Verify operability	Annual
Emergency diesel generator	Perform no-load test and verify sufficient fuel	Annual

Table 6A-2 Example Container and Container Storage Area Inspection Schedules

Name	Inspection	Frequency
Dangerous and/or Mixed Waste Container Storage Areas		
• HLW Vit Plant canister storage ~~areas Nos. 1,2, & 3~~ cave East corridor El. 0 ft, loading area, swabbing and monitoring area • ~~LAW Vit Plant container storage area~~ • Non-radioactive dangerous waste container storage area • ~~Central waste container storage area~~ • ~~HLW Out-of-service Melters~~ • ~~LAW Out-of-Service Melters~~ • Failed melter storage facility • Laboratory waste management area	Verify major risk labels present and legible, ensure all containers closed (except when waste is being added to container); Check that container storage areas are free of liquid and debris; Check for significant cracks, gaps, and other signs of deterioration of storage area floors; Verify minimum 30 inches of aisle space between containers rows; Ensure that any containers holding free liquids have portable secondary containment and no liquids accumulated in portable secondary containment	~~Weekly~~ At least every seven days
Immobilized HLW and LAW Containers		
Empty LAW containers and HLW canisters for immobilized ~~LAW and HLW~~ waste	Inspect container for liquid or debris inside, cracks, dents, bulges, gouges, or other abnormalities	Prior to filling
Filled IHLW canisters and ILAW containers ~~(canisters)~~	Inspect (by camera surveillance or cell window) each container for cracks, leaks, bulges, or other abnormalities	After sealing container
	Record in tracking system each container's location when placed in storage; Record in tracking system all container location changes if container(s) are moved while in storage; Verify container in recorded location when transporting container out of WTP storage	Within 48 hours of placing or moving each container
HLW ~~and LAW~~ Vitrification Plant's ~~s~~ Container Storage Area		
IHLW ~~and ILAW container~~ canister storage area (H-0132) ~~and LAW container buffer storage area (L-B025C/D)~~	Visually check for liquid, foreign material, or debris in storage area; Check for deformities in storage area floors	~~Weekly~~ At least every seven days when facility is storing waste in immobilized waste container storage area
~~ILAW buffer container storage area~~	~~Visually check (camera surveillance or other remote means) for damaged containers;~~ ~~Check liquids, foreign materials or debris in storage area;~~ ~~Check for cracks and deformities in storage area~~	~~Weekly when facility is storing waste~~

Table 6A-3 Example Tank Systems and Ancillary Equipment Inspection Schedule

Component Name	Plant item number	Inspection	Frequency
Pretreatment Plant Tank System			
FRP			
Waste feed receipt vessels	FRP-VSL-00002A FRP-VSL-00002B FRP-VSL-00002C FRP-VSL-00002D ~~V11021A, V11020B, V11020C, V11020D~~	Inspect tank level monitoring data to prevent overflow	Daily
FEP			
Waste feed evaporator feed vessels	FEP-VSL-00017A FEP-VSL-00017B ~~V11001A, V11001B~~	Inspect tank level monitoring data to prevent overflow	Daily
LAW feed evaporator condensate vessel	FEP-VSL-00005	Inspect tank level monitoring data to prevent overflow	Daily
~~Waste feed evaporator separator vessels~~	~~V11002A, V11002B~~	~~Inspect tank level monitoring data to prevent overflow~~	~~Daily~~
~~Evaporator process condensate pot~~	~~V11005~~	~~Inspect tank level monitoring data to prevent overflow~~	~~Daily~~
HLP			
HLW ~~Strontium/transuranic~~ Llag storage vessel	HLP-VSL-00027A HLP-VSL-00027B ~~V12001A, V12001C~~	Inspect tank level monitoring data to prevent overflow	Daily
HLW feed receipt vessel	HLP-VSL-00022	Inspect tank level monitoring data to prevent overflow	Daily
~~Lag storage vessels~~	~~V12001D, V12001E~~	~~Inspect tank level monitoring data to prevent overflow~~	~~Daily~~
HLW feed blending vessel	HLP-VSL-00028 ~~V12007~~	Inspect tank level monitoring data to prevent overflow	Daily

Table 6A-3 Example Tank Systems and Ancillary Equipment Inspection Schedule

Component Name	Plant item number	Inspection	Frequency
UFP			
~~Evaporator concentrate buffer vessels~~	~~V12010A, V12010B~~	~~Inspect tank level monitoring data to prevent overflow~~	~~Daily~~
~~LAW permeate hold vessels~~	~~V12015A, V12015B, V12015C~~	~~Inspect tank level monitoring data to prevent overflow~~	~~Daily~~
Ultrafiltration feed preparation vessels	UFP-VSL-00001A UFP-VSL-00001B	Inspect tank level monitoring data to prevent overflow	Daily
Ultrafiltration feed vessels	UFP-VSL-00002A UFP-VSL-00002B ~~V12011A, V12011B~~	Inspect tank level monitoring data to prevent overflow	Daily
Ultrafilter permeate vessel	UFP-VSL-00062A UFP-VSL-00062B UFP-VSL-00062C	Inspect tank level monitoring data to prevent overflow	Daily
Ultrafilters	UFP-FILT-00001A UFP-FILT-00001B UFP-FILT-00002A UFP-FILT-00002B UFP-FILT-00003A UFP-FILT-00003B ~~G12002A, G12002B, G12003A, G12003B, G12004A, G12004B~~	Inspect tank level monitoring data to prevent overflow	Daily
CXP			
~~LAW~~ Cesium ion exchange feed vessel	CXP-VSL-00001 ~~V13001~~	Inspect tank level monitoring data to prevent overflow	Daily
Cesium ion exchange columns	CXP-IXC-00001 CXP-IXC-00002 CXP-IXC-00003 CXP-IXC-00004 ~~C13001, C13002, C13003, C13004~~	Inspect column monitoring data to prevent release	Daily
Cesium reagent vessel	CXP-IXC-00005	Inspect tank level monitoring data to prevent overflow	Daily
Cesium ion exchange caustic rinse collection vessel	CXP-VSL-00004 ~~V13008~~	Inspect tank level monitoring data to prevent overflow	Daily
Cesium ion exchange treated LAW collection vessels	CXP-VSL-00026A CXP-VSL-00026B CXP-VSL-00026C	Inspect tank level monitoring data to prevent overflow	Daily

Table 6A-3 Example Tank Systems and Ancillary Equipment Inspection Schedule

Component Name	Plant item number	Inspection	Frequency
CNP			
~~Cesium Concentrate lute pot~~	~~V13030~~	~~Inspect tank level monitoring data to prevent overflow~~	~~Daily~~
Cesium evaporator eluate lute vessel	CNP-VSL-00001	Inspect tank level monitoring data to prevent overflow	Daily
Cesium evaporator recovered nitric acid vessel	CNP-VSL-00004 ~~V13028~~	Inspect tank level monitoring data to prevent overflow	Daily
Eluate contingency storage vessel	CNP-VSL-00003 ~~V13073~~	Inspect tank level monitoring data to prevent overflow	Daily
PVP			
~~HEME drain collection~~ ~~V~~vessel ventilation HEME drain collection vessel ~~Vessel vent heaters collection vessel~~	PVP-VSL-00001	Inspect tank level monitoring data to prevent overflow	Daily
PJV			
PJV HEME drain collection vessel	PJV-VSL-00002 ~~V15326, V15327~~	Inspect tank level monitoring data to prevent overflow	Daily
~~Condensate collection vessel~~	~~V15038~~	~~Inspect tank level monitoring data to prevent overflow~~	~~Daily~~
~~Vessel vent header collection vessel~~	~~V15052~~	~~Inspect tank level monitoring data to prevent overflow~~	~~Daily~~
PWD			
Ultimate overflow vessel	PWD-VSL-00033 ~~V15009B~~	Inspect tank level monitoring data to prevent overflow	Daily
Plant wash vessel	PWD-VSL-00044 ~~V15009A~~	Inspect tank level monitoring data to prevent overflow	Daily
~~Primary~~ Acidic/alkaline effluent vessel	PWD-VSL-00015 ~~V45013~~	Inspect tank level monitoring data to prevent overflow	Daily
~~Secondary~~ Acidic/alkaline effluent vessel	PWD-VSL-00016 ~~V45018~~	Inspect tank level monitoring data to prevent overflow	Daily

Table 6A-3 Example Tank Systems and Ancillary Equipment Inspection Schedule

Component Name	Plant item number	Inspection	Frequency
C3 floor drains ~~collection vessel~~ tank	PWD-VSL-00046 ~~V15319~~	Inspect tank level monitoring data to prevent overflow	Daily
HLW effluent transfer vessel	PWD-VSL-00043 ~~V12002~~	Inspect tank level monitoring data to prevent overflow	Daily
~~Acidic Effluent vessel~~	~~V15013~~	~~Inspect tank level monitoring data to prevent overflow~~	~~Daily~~
~~Contaminated effluent vessels~~	~~V15018~~	~~Inspect tank level monitoring data to prevent overflow~~	~~Daily~~
TLP			
Treated LAW evaporator condensate vessel	TLP-VSL-00002	Inspect tank level monitoring data to prevent overflow	Daily
LAW SBS condensate receipt vessel	TLP-VSL-00009A TLP-VSL-00009B	Inspect tank level monitoring data to prevent overflow	Daily
~~Evaporator separator vessel~~	~~V41011~~	~~Inspect tank level monitoring data to prevent overflow~~	~~Daily~~
~~Process condensate hold vessel~~	~~V41013~~	~~Inspect tank level monitoring data to prevent overflow~~	~~Daily~~
~~Plant wash vessels~~	~~V45009A, V45009B~~	~~Inspect tank level monitoring data to prevent overflow~~	~~Daily~~
TCP			
Treated LAW ~~buffer~~ concentrate storage vessel	TCP-VSL-00001 ~~V41001~~	Inspect tank level monitoring data to prevent overflow	Daily

Table 6A-3 Example Tank Systems and Ancillary Equipment Inspection Schedule

Component Name	Plant item number	Inspection	Frequency
TXP			
Technetium eluant recovery evaporator	C43006, C43007, C43008, C43009	Inspect column monitoring data to prevent overflow	Daily
Caustic rinse collection vessel	V43056	Inspect tank level monitoring data to prevent overflow	Daily
Technetium ion exchange buffer vessel	V43001	Inspect tank level monitoring data to prevent overflow	Daily
Treated LAW buffer vessels	V43110A, V43110B, V43110C	Inspect tank level monitoring data to prevent overflow	Daily
TEP			
Technetium eluant recovery evaporator	V43069	Inspect tank level monitoring data to prevent overflow	Daily
Recovered technetium eluant vessel	V43072	Inspect tank level monitoring data to prevent overflow	Daily
Technetium concentrate lute pot	V43072	Inspect tank level monitoring data to prevent overflow	Daily
RDP			
Spent resin slurry collection vessels	RDP-VSL-00002A RDP-VSL-00002B RDP-VSL-00002C	Inspect tank level monitoring data to prevent overflow	Daily
Spent resin dewatering moisture separation vessel	RDP-VSL-00004	RESERVED	Daily
~~Resin flush collection vessel~~	~~V43136~~	~~Inspect tank level monitoring data to prevent overflow~~	~~Daily~~
RLD			
Process condensate vessels	RDP-TK-00006A RDP-TK-00006B ~~V45028A, V45028B~~	Inspect tank level monitoring data to prevent overflow	Daily
Alkaline effluent vessels	RLD-VSL-00017A RLD-VSL-00017B	Inspect tank level monitoring data to prevent overflow	Daily
PIH			
Decontamination soak tank	PIH-TK-00001	Inspect tank level monitoring data to prevent overflow	Daily

Table 6A-3 Example Tank Systems and Ancillary Equipment Inspection Schedule

Component Name	Plant item number	Inspection	Frequency
LAW Vitrification Plant Tank System			
LCP			
LAW Melter 1 concentrate receipt vessel	LCP-VSL-00001 ~~V21001~~	Inspect tank level monitoring data to prevent overflow	Daily
LAW Melter 2 concentrate receipt vessel	LCP-VSL-00002 ~~V21002~~	Inspect tank level monitoring data to prevent overflow	Daily
~~Melter 3 concentrate receipt vessel~~	~~V21003~~	~~Inspect tank level monitoring data to prevent overflow~~	~~Daily~~
LFP			
Melter 1 feed preparation vessel	LFP-VSL-00001 ~~V21001~~	Inspect tank level monitoring data to prevent overflow	Daily
Melter 1 feed vessel	LFP-VSL-00002 ~~V21102~~	Inspect tank level monitoring data to prevent overflow	Daily
Melter 2 feed preparation vessel	LFP-VSL-00003 ~~V21201~~	Inspect tank level monitoring data to prevent overflow	Daily
Melter 2 feed vessel	LFP-VSL-00004 ~~V21202~~	Inspect tank level monitoring data to prevent overflow	Daily
~~Melter 3 feed preparation vessel~~	~~V21301~~	~~Inspect tank level monitoring data to prevent overflow~~	~~Daily~~
~~Melter 3 feed vessel~~	~~V21302~~	~~Inspect tank level monitoring data to prevent overflow~~	~~Daily~~
LVP			
LAW ~~caustic scrubber blowdown vessel~~ collection tank	LVP-TK-00001 ~~V22001~~	Inspect tank level monitoring data to prevent overflow	Daily
LOP			
LAW Melter 1 SBS condensate vessel	LOP-VSL-00001 ~~V22101~~	Inspect tank level monitoring data to prevent overflow	Daily
LAW Melter 2 SBS condensate vessel	LOP-VSL-00002 ~~V22201~~	Inspect tank level monitoring data to prevent overflow	Daily

Table 6A-3 Example Tank Systems and Ancillary Equipment Inspection Schedule

Component Name	Plant item number	Inspection	Frequency
~~Melter 3 SBS condensate vessel~~	~~V22301~~	~~Inspect tank level monitoring data to prevent overflow~~	~~Daily~~
RLD			
Plant wash vessel	RLD-VSL-00003 ~~V25001~~	Inspect tank level monitoring data to prevent overflow	Daily
~~LAW~~ C3/C5 ~~effluent~~ drains/sump collection vessel	RLD-VSL-00004 ~~V25002~~	Inspect tank level monitoring data to prevent overflow	Daily
SBS condensate collection vessel	RLD-VSL-00005 ~~V25003~~	Inspect tank level monitoring data to prevent overflow	Daily
HLW Vitrification Plant Tank System			
~~**HCP**~~			
~~Concentrate receipt vessel 1~~	~~V31101~~	~~Inspect tank level monitoring data to prevent overflow~~	~~Daily~~
~~Concentrate receipt vessel 2~~	~~V31002~~	~~Inspect tank level monitoring data to prevent overflow~~	~~Daily~~
HOP			
SBS condensate ~~collection~~ receiver vessel 1	HOP-VSL-00903 ~~V32101~~	Inspect tank level monitoring data to prevent overflow	Daily
SBS condensate receiver vessel 2	HOP-VSL-00904	Inspect tank level monitoring data to prevent overflow	Daily
HDH			
Canister decon~~tamination~~ vessel	HDH-VSL-00002 ~~V33001~~	Inspect tank level monitoring data to prevent overflow	Daily
Canister decon vessel	HDH-VSL-00004	Inspect tank level monitoring data to prevent overflow	Daily
Waste neutralization vessel	HDH-VSL-00003 ~~V33002~~	Inspect tank level monitoring data to prevent overflow	Daily
Canister rinse bogie decon~~tamination~~ vessel	HDH-VSL-00001 ~~V33004~~	Inspect tank level monitoring data to prevent overflow	Daily
RLD			
Acidic waste vessel	RLD-VSL-00007 ~~V35002~~	Inspect tank level monitoring data to prevent overflow	Daily

Table 6A-3 Example Tank Systems and Ancillary Equipment Inspection Schedule

Component Name	Plant item number	Inspection	Frequency
Plant wash and drains vessel	RLD-VSL-00008 ~~V35003~~	Inspect tank level monitoring data to prevent overflow	Daily
~~Decontamination effluent collection vessel~~	~~V35009~~	~~Inspect tank level monitoring data to prevent overflow~~	~~Daily~~
Offgas drains collection vessel	RLD-VSL-00002 ~~V35038~~	Inspect tank level monitoring data to prevent overflow	Daily
HFP			
HLW Melter ~~1~~ Feed preparation vessel	HFP-VSL-00001 ~~V31101~~	Inspect tank level monitoring data to prevent overflow	Daily
HLW Melter ~~2~~ Feed preparation vessel	HFP-VSL-00005	Inspect tank level monitoring data to prevent overflow	Daily
HLW Melter ~~1~~ feed vessel	HFP-VSL-00002 HFP-VSL-00006 ~~V31102~~	Inspect tank level monitoring data to prevent overflow	Daily
~~HLW Melter 2 feed vessel~~		~~Inspect tank level monitoring data to prevent overflow~~	~~Daily~~
HSH			
Decontamination Tank Melter cave 1	HSH-TK-00001	Inspect tank level monitoring data to prevent overflow	Daily
Decontamination Tank Melter cave 2	HSH-TK-00002	Inspect tank level monitoring data to prevent overflow	Daily
Analytical Laboratory Tank System			
LAB			
~~Lab Liquid effluent collection vessels~~	~~V60001a & V60001b~~	~~Inspect tank level monitoring data to prevent overflow~~	~~Daily~~
Lab area sink drain collection vessel	RLD-VSL-00164	Inspect tank level monitoring data to prevent overflow	Daily
Hot cell drain collection vessel	RLD-VSL-00165	Inspect tank level monitoring data to prevent overflow	Daily

Table 6A-3 Example Tank Systems and Ancillary Equipment Inspection Schedule

Component Name	Plant item number	Inspection	Frequency
Plant Sumps as identified in Chapter 4: Leak Detection for Primary Containment			
Leak detectors located in secondary containment for all tank systems, container storage areas, miscellaneous units, and containment buildings managing dangerous and/or mixed waste		Monitor ~~cell~~ leak detection instrumentation or monitoring data to detect leaks	Daily
Underground Piping (receiving from DST and transferring out)			
Leak detectors		Monitor ~~cell~~ leak detection instrumentation or monitoring data to detect leaks	Daily

Table 6A-4 Example Cathodic Protection Inspection Schedule-Dangerous Waste Transfer Lines

Component Name and Line Number	Inspection	Frequency
Cathodic protection systems for dangerous and mixed waste transfer lines	Verify proper operation	Initial (less than 6 months after installation) Annually (from date of initial installation inspection, above)
All sources of impressed current supporting cathodically protected dangerous and mixed waste transfer lines	Test for proper function	Bi-monthly

Table 6A-5 Example Ignitable or Reactive Wastes Inspection Schedule

Component Name	Inspection	Frequency
Receipt tanks	Inspect, by qualified personnel or in the presence of fire marshal, for compliance with Uniform Fire Code and enter inspection into operating record	365 days
Containers and container storage areas storing ignitable or reactive waste	Inspect, by professional person or in the presence of fire marshal for compliance with Uniform Fire Code and enter inspection into operating record. Inspect containers and container storage areas for compliance with WAC 173-303-630 (8) requirements.	365 days

Table 6A-6 Example Miscellaneous Treatment Unit Schedule

Component Name	Plant Item Number	Inspection	Frequency
~~LAW & HLW Melters~~		• ~~Visual inspection (via cave window or CCTV if provided) for damage , leaks, or abnormalities~~ • ~~Inspect melter level monitoring data to prevent overflow~~	~~Daily~~
Pretreatment Facility Miscellaneous Treatment Unit Systems			
TLP			
Treated LAW evaporator separator vessel	TLP-SEP-00001	Inspect vessel level monitoring data to prevent overflow	Daily
Reboiler	TLP-RBLR-00001	TBD	TBD
Primary Condenser	TLP-COND-00001	TBD	TBD
Inter-Condenser	TLP-COND-00003	TBD	TBD
After-Condenser	TLP-COND-00002	TBD	TBD
FEP			
Waste Feed Evaporator Separator Vessels	FEP-SEP-00001A FEP-SEP-00001B	TBD	TBD
Reboilers	FEP-RBLR-00001A FEP-RBLR-00001B	TBD	TBD
Primary Condensers	FEP-COND-00001A FEP-COND-00001B	TBD	TBD
Inter-Condensers	FEP-COND-00002A FEP-COND-00002B	TBD	TBD
After-Condensers	FEP-COND-00003A FEP-COND-00003B	TBD	TBD
PJV			
Primary HEPA filters	PJV-HEPA-00001A PJV-HEPA-00001B PJV-HEPA-00001C PJV-HEPA-00001D PJV-HEPA-00001E PJV-HEPA-00001F PJV-HEPA-00001G	TBD	TBD

Table 6A-6 Example Miscellaneous Treatment Unit Schedule

Component Name	Plant Item Number	Inspection	Frequency
Secondary HEPA filters	PJV-HEPA-00002A PJV-HEPA-00002B PJV-HEPA-00002C PJV-HEPA-00002D PJV-HEPA-00002E PJV-HEPA-00002F	TBD	TBD
Exhaust fans	PJV-FAN-00001A PJV-FAN-00001B PJV-FAN-00001C	TBD	TBD
Demisters	PJV-DMST-00002A PJV-DMST-00002B PJV-DMST-00002C	TBD	TBD
PVP			
Electric heaters	PVP-HTR-00001A PVP-HTR-00001B PVP-HTR-00001C	TBD	TBD
After-cooler	PVP-CLR-00001	TBD	TBD
Carbon bed adsorbers	PVP-ADBR-00001A PVP-ADBR-00001B	TBD	TBD
VOC oxidizer unit	PVP-OXID-00001	TBD	TBD
Adsorber outlet filters	PVP-FILT-00001	TBD	TBD
HEME filters	PVP-HEME-00001A PVP-HEME-00001B PVP-HEME-00001C	TBD	TBD
Heat Exchanger	PVP-HX-00002	TBD	TBD
HEPA filters	PVP-HEPA-00001A PVP-HEPA-00001B PVP-HEPA-00001C PVP-HEPA-00023 PVP-HEPA-00024 PVP-HEPA-00028 PVP-HEPA-00029 PVP-HEPA-00030 PVP-HEPA-00031 PVP-HEPA-00032 PVP-HEPA-00033 PVP-HEPA-00034 PVP-HEPA-00035	TBD	TBD
Caustic scrubber	PVP-SCB-00002	TBD	TBD

Table 6A-6 Example Miscellaneous Treatment Unit Schedule

Component Name	Plant Item Number	Inspection	Frequency
PVV			
HEPA filters	PVV-HEPA-00001A PVV-HEPA-00001B PVV-HEPA-00002A PVV-HEPA-00002B	TBD	TBD
Exhaust fans	PVV-FAN-00001A PVV-FAN-00001B	TBD	TBD
CNP			
Separator Vessel	CNP-EVAP-00001	TBD	TBD
Cesium evaporator concentrate reboiler	CNP-HX-00001	TBD	TBD
Cesium nitric acid rectifier column	CNP-DISTC-00001	TBD	TBD
Cesium evaporator primary condenser	CNP-HX-00002	TBD	TBD
Cesium evaporator secondary condenser	CNP-HX-00003	TBD	TBD
Cesium evaporator after-condenser	CNP-HX-00004	TBD	TBD
LAW Vitrification Plant Miscellaneous Treatment Unit Subsystems			
LMP			
LAW melters	LMP-MLTR-00001 LMP-MLTR-00002	Visual inspection (via cave window or CCTV if provided) for damage, leaks, or abnormalities Inspect melter level monitoring data to prevent overflow	Daily
LOP			
Melter 1 and melter 2 submerged bed scrubbers	LOP-SCB-00001 LOP-SCB-00002	TBD	TBD
Melter 1 and melter 2 wet electrostatic precipitators	LOP-WESP-00001 LOP-WESP-00002	TBD	TBD
Primary/secondary film coolers	LOP-FCLR-00001 LOP-FCLR-00002 LOP-FCLR-00003 LOP-FCLR-00004	TBD	TBD
LVP			
LAW Melter Offgas Caustic scrubber	LVP-SCB-00001	TBD	TBD

Table 6A-6 Example Miscellaneous Treatment Unit Schedule

Component Name	**Plant Item Number**	**Inspection**	**Frequency**
HEPA filters	LVP-HEPA-00001A LVP-HEPA-00001B LVP-HEPA-00002A LVP-HEPA-00002B LVP-HEPA-00003A	TBD	TBD
Thermal catalytical Oxidation Unit	LVP-SCO-00001	TBD	TBD
Selective catalytic reduction units	LVP-SCR-00001 LVP-SCR-00002	TBD	TBD
Electric heaters	LVP-HTR-00001A LVP-HTR-00001B LVP-HTR-00002	TBD	TBD
Heat exchangers	LVP-HX-00001	TBD	TBD
LAW stack		TBD	TBD
Offgas Mercury Adsorbers	LVP-ADBR-0000A1/1B	TBD	TBD
Exhausters	LVP-EXHR-00001A LVP-EXHR-00001B LVP-EXHR-00001C	TBD	TBD
HLW Vitrification Plant Miscellaneous Treatment Unit Subsystems			
HMP			
HLW melters	HMP-MLTR-00001 HMP-MLTR-00002	Visual inspection (via cave window or CCTV if provided) for damage, leaks, or abnormalities Inspect melter level monitoring data to prevent overflow	Daily
HOP			
HLW Submerged bed scrubber	HOP-SCB-00001 HOP-SCB-00002	TBD	TBD
Wet electrostatic precipitators	HOP-WESP-00001 HOP-WESP-00002	TBD	TBD
Thermal Catalytical Oxidation Units	HOP-SCO-00001 HOP-SCO-00004	TBD	TBD
NOx selective catalytic Reduction Units	HOP-SCR-00001 HOP-SCR-00002	TBD	TBD
Silver mordenite columns	HOP-ABS-00002 HOP-ABS-00003	TBD	TBD

Table 6A-6 Example Miscellaneous Treatment Unit Schedule

Component Name	**Plant Item Number**	**Inspection**	**Frequency**
HEPA filters	HOP-HEPA-00001A HOP-HEPA-00001B HOP-HEPA-00002A HOP-HEPA-00002B HOP-HEPA-00007A HOP-HEPA-00007B HOP-HEPA-00008A HOP-HEPA-00008B	TBD	TBD
Offgas Film coolers	HOP-FCLR-00001 HOP-FCLR-00002	TBD	TBD
Catalyst Skid Preheaters	HOP-HX-00002 HOP-HX-00003	TBD	TBD
HEPA Preheaters	HOP-HTR-00001B HOP-HTR-00002A HOP-HTR-00005A HOP-HTR-00005B	TBD	TBD
Catalyst skid electric heaters	HOP-HTR-00007 HOP-HTR-00001		
Silver Mordenite Preheaters	HOP-HX-00001 HOP-HX-00004	TBD	TBD
Stack Extraction fans	HOP-FAN-00008A HOP-FAN-00008B HOP-FAN-00008C HOP-FAN-00010A HOP-FAN-00010B HOP-FAN-00010C	TBD	TBD
Booster Extraction Fans	HOP-FAN-00001A HOP-FAN-00001B HOP-FAN-00001C HOP-FAN-00009A HOP-FAN-00009B HOP-FAN-00009C	TBD	TBD
HLW stack		TBD	TBD
Activated carbon Adsorber	HOP-ADBR-00001A HOP-ADBR-00001B HOP-ADBR-00002A HOP-ADBR-00002B	TBD	TBD
High efficiency mist eliminators	HOP-HEME-00001A HOP-HEME-00001B HOP-HEME-00002A HOP-HEME-00002B	TBD	TBD
PJV			
HEPA filters	PJV-HEPA-00004A PJV-HEPA-00004B PJV-HEPA-00005A PJV-HEPA-00005B	TBD	TBD

Table 6A-6 Example Miscellaneous Treatment Unit Schedule

Component Name	Plant Item Number	Inspection	Frequency
HEPA Electric Preheater	PJV-HTR-00002	TBD	TBD
Pulse jet extraction fans	PJV-FAN-00002A PJV-FAN-00002B	TBD	TBD
PVV			
RESERVED	RESERVED	RESERVED	RESERVED

Table 6A-7 Example Containment Buildings Inspection Schedule

Component Name	Inspection	Frequency
• Containment building areas as designated in Chapter 4	~~• Visual of area surrounding containment buildings to detect signs of releases of hazardous waste~~ ~~• Primary barrier in low or no radiation zones – look for significant cracks, gaps, corrosion or other signs of deterioration, look for liquid on the floor~~ • Inspect and record in the operating record data gathered from monitoring equipment and leak detection equipment as well as the containment building and the area immediately surrounding the containment building to detect signs of releases of dangerous waste. All areas should be inspected for significant cracks, gaps, corrosion, or other signs of deterioration; look for liquids on floor. • ~~High radiation areas –~~ Check differential pressure monitoring records to ensure negative pressure in containment building area	~~Weekly~~ At least every seven days

Attachment 51 - Appendix 1.0
WTP Interim Compliance Schedule

Interim Compliance Schedule- WTP Facility		
	Compliance Schedule Submittal	**Interim Compliance Date**
	III.10.C.2	
1.	Submit documentation stating the WTP has been constructed in compliance with the Permit.	03/01/08
2.	Submit updated Site Transportation Report for incorporation into the Administrative Record.	Completed
33.	Update and resubmit the Part A, Form 3 Permit Application.	TBD
34.	Submit the potential disposal path(s), including the potential authorized TSD facilities	TBD
	III.10.C.3	
3.	Revise and Submit Waste Analysis Plan and associated Quality Assurance Project Plan to Ecology for review and approval	04/01/07
	III.10.C.5.	
4.	Update and submit for approval "Procedures to Prevent Hazards", Chapter 6.0 Sections 6.3, 6.4, 6.5 and the Inspection Schedule.	04/01/07
	III.10.C.6	
5.	Update and submit the Contingency Plan	04/01/07
	III.10.C.7	
6.	Update and resubmit for review and approval Training Program description in Chapter 8 of the Permit.	04/01/07
7.	Submit under separate cover the actual WTP Dangerous Waste Training Plan for incorporation into Administrative Record.	04/01/07
	III.10.C.8	
8.	Update and resubmit the Closure Plan for approval	04/01/07
	III.10.C.11	
9.	Submit Risk Assessment Workplan, revised in consultation with Ecology.	Completed
	III.10.C.16	
36.	Submit system descriptions for mechanical	12/31/2009

Interim Compliance Schedule- WTP Facility		
	Compliance Schedule Submittal	**Interim Compliance Date**
	handling systems identified in Permit Table III.10.C.A.	
37.	Submit mechanical handling diagrams and mechanical handling data sheets for mechanical handling equipment identified in Permit Condition III.10.C.16.a.i.B.	12/31/2007
38.	Submit equipment instrument logic narrative description for mechanical handling equipment, as specified in Permit Condition III.10.C.16.a.ii.A.	Prior to initial receipt of dangerous waste.
39.	Submit descriptions of operational procedures for mechanical handling systems, as specified in Permit Condition III.10.C.16.a.ii.B.	Prior to initial receipt of dangerous waste.
	CONTAINERS	
10.	Submit detailed information associated with containers and container management areas	03/22/06
11.	Submit descriptions of container management practices	04/01/07
	TANK SYSTEMS	
12.	Submit engineering information for each secondary containment and leak detection system for the WTP Tank System to be included in the permit	10/30/2005
13.	Submit engineering information for each dangerous waste tank and primary sump to be included in the permit	04/29/06
14.	Submit engineering information for each tank system ancillary equipment to be included in the permit	04/29/06
15.	Submit descriptions of tank management practices	04/01/07
40.	Submit WTP permit version of *Pipe Stress Design Criteria including "Pipe stress Criteria" and "Span Method Criteria,"* 24590-WTP-DC-PS-01-001, including a commitment to meet ASME B31.3 for DWP regulated piping.	04/30/2007
	CONTAINMENT BUILDINGS	
16.	Submit engineering information for each containment building to be included in the permit	Complete
17.	Submit descriptions of containment building management practices	04/01/07
	PRETREATMENT PLANT MISC. UNITS SYSTEMS	

Interim Compliance Schedule- WTP Facility		
	Compliance Schedule Submittal	**Interim Compliance Date**
18.	Submit engineering information for secondary containment and leak detection system for the Pretreatment Plant Miscellaneous Unit Systems	~~10/30/05~~ 10/30/06
19.	Submit engineering information for Pretreatment Plant Miscellaneous Unit Systems	02/11/06
20.	Submit engineering information for Pretreatment Plant Miscellaneous Unit Systems equipment	04/12/06
21.	Submit descriptions of management practices for the Pretreatment Miscellaneous Treatment System	04/01/07
	LAW SHORT TERM MELTER UNIT	
22.	Submit engineering information for LAW Vitrification Miscellaneous Treatment Unit secondary containment	Completed
23.	Submit engineering information for LAW Vitrification Miscellaneous Treatment Unit sub-system	08/18/06
24.	Submit engineering information for equipment for each LAW Vitrification Miscellaneous Treatment Unit sub-system	06/02/06
25.	Submit descriptions of management practices for the LAW Vitrification Miscellaneous Treatment System	04/01/07
26.	Submit LAW Vitrification Environmental Performance Demonstration Test Plan for Ecology review and approval	10/02/06
	HLW SHORT TERM MELTER UNIT	
27.	Submit engineering information for HLW Vitrification Miscellaneous Treatment Unit secondary containment	Complete
28.	Submit engineering information for HLW Vitrification Miscellaneous Treatment Unit sub-system	06/18/06
29.	Submit engineering information for equipment for each HLW Vitrification Miscellaneous Treatment Unit sub-system	06/18/06
30.	Submit descriptions of management practices for the HLW Vitrification Miscellaneous Treatment System	04/01/07

Interim Compliance Schedule- WTP Facility		
	Compliance Schedule Submittal	**Interim Compliance Date**
31.	Submit HLW Vitrification Environmental Performance Demonstration Test Plan for Ecology review and approval	10/02/06
32.	Final Compliance Date	02/28/09
	REPORT OF PROGRESS	
35.	Submit 2005 Report of Progress	9/31/05

THIS PAGE INTENTIONALLY
LEFT BANK

Attachment 51 – Appendix 2.0
Critical Systems for the WTP

Where information regarding treatment, management, and disposal of the radioactive source, byproduct material, and/or special nuclear components of mixed waste (as defined by the Atomic Energy Act of 1954, as amended) has been incorporated into this permit, it is not incorporated for the purpose of regulating the radiation hazards of such components under the authority of this permit and chapter 70.105 RCW. In the event of any conflict between Permit Condition III.10.A. and any statement relating to the regulation of source, special nuclear, and byproduct material contained in portions of the permit application that are incorporated into this permit, Permit Condition III.10.A. shall prevail.

Mnemonic System Locator	System Name
Pretreatment Systems	
CNP	Cesium Nitric Acid Recovery Process System
CXP	Cesium Ion Exchange Process System
FEP	Waste Feed Evaporation Process System
FRP	Waste Feed Receipt Process System
HLP	HLW Lag Storage and Feed Blending Process System
PFH	Pretreatment Filter Cave Handling System
PIH	Pretreatment In-Cell Handling System
PJV	Pulse Jet Ventilation System
PVP	Pretreatment Vessel Vent Process System
PVV	Process Vessel Vent System
PWD	Plant Wash and Disposal System
RDP	Spent Resin and Dewatering Process System
RLD	Radioactive Liquid Waste Disposal System
RWH	Radioactive Solid Waste Handling System
TCP	Treated LAW Concentrate Storage Process System
TEP	Technetium Eluant Recovery Process System
TLP	Treated LAW Evaporation Process System
TXP	Technetium Ion Exchange Process System
UFP	Ultrafiltration Process System
Low-Activity Waste Systems	
LCP	LAW Concentrate Receipt Process System
LEH	LAW Canister Export Handling System
LFH	LAW Container Finishing Handling System
LFP	LAW Melter Feed Process System

Mnemonic System Locator	System Name
LMH	LAW Melter Handling System
LMP	LAW Melter Process System
LOP	LAW Primary Offgas Process System
LPH	LAW Container Pour Handling System
LSH	LAW Melter Equipment Support Handling System
LVP	LAW Secondary Offgas/Vessel Vent Process System
RLD	Radioactive Liquid Waste Disposal System
RWH	Radioactive Solid Waste Handling System
High-Level Waste Systems	
HCP	HLW Concentrate Receipt Process System
HDH	HLW Canister Decontamination Handling System
HEH	HLW Canister Export Handling System
HFH	HLW Filter Cave Handling System
HFP	HLW Melter Feed Process System
HMH	HLW Melter Handling System
HMP	HLW Melter Process System
HOP	Melter Offgas Treatment Process System
HPH	HLW Canister Pour Handling System
HSH	HLW Melter Cave Support Handling System
PJV	Pulse-Jet Ventilation System
PVV	Process Vessel Vent System
RLD	Radioactive Liquid Waste Disposal System
RWH	Radioactive Solid Waste Handling System
Analytical Laboratory Systems	
RLD	Radioactive Liquid Waste Disposal System
RWH	Radioactive Solid Waste Handling System
Balance of Facilities Systems	
CPE	Cathodic Protection Electrical System
RLD	Radioactive Liquid Waste Disposal System
RWH	Radioactive Solid Waste Handling System

THIS PAGE INTENTIONALLY
LEFT BANK

Attachment 51 – Appendix 6.0
Risk Assessment

Where information regarding treatment, management, and disposal of the radioactive source, byproduct material, and/or special nuclear components of mixed waste (as defined by the Atomic Energy Act of 1954, as amended) has been incorporated into this permit, it is not incorporated for the purpose of regulating the radiation hazards of such components under the authority of this permit and chapter 70.105 RCW. In the event of any conflict between Permit Condition III.10.A. and any statement relating to the regulation of source, special nuclear, and byproduct material contained in portions of the permit application that are incorporated into this permit, Permit Condition III.10.A. shall prevail.

Additional appendices will be added to this appendix as new information is incorporated into this permit.

Drawings and Documents
Attachment 51 – Appendix 6.1
WTP Risk Assessment – Environmental Risk Assessment Work Plan

The following drawings have been incorporated into Appendix 6.1 and can be viewed at the Ecology Richland Office. **New drawings are in bold lettering.**

Drawing/Document Number	***Description***
24590-WTP-RPT-ENS-03-006, Rev 0	Environmental Risk Assessment Work Plan for the Hanford Tank Waste Treatment and Immobilization Plant 07/30/2003 – *Complete Document located on WTP CD*
RESERVED	RESERVED

Drawings and Documents

Attachment 51 – Appendix 6.1.1

WTP Risk Assessment – Previously Submitted Work Plan

The following drawings have been incorporated into Appendix 6.1.1 and can be viewed at the Ecology Richland Office. **New drawings are in bold lettering.**

Drawing/Document Number	***Description***
24590-RPT-W375-EN00001, Rev. 1	Final Work Plan for Screening Level Risk Assessment for the RPP-WTP 04/28/2000 *– Complete Document located on WTP CD*
RESERVED	RESERVED

Drawings and Documents

Attachment 51 – Appendix 6.1.2

WTP Risk Assessment –

Documentation of Revisions to Preliminary Risk Assessment Work Plan

The following drawings have been incorporated into Appendix 6.1.2 and can be viewed at the Ecology Richland Office. **New drawings are in bold lettering.**

Drawing/Document Number	***Description***
DOE-01-EQD-021	Ecology/EPA Technical Comments on Hanford River Protection Privatization Project Review of BNFL Final Work Plan for Screening Level Risk Assessment for the RPP-WTP 04/28/2000 *– Complete Document located on WTP CD*
RESERVED	RESERVED